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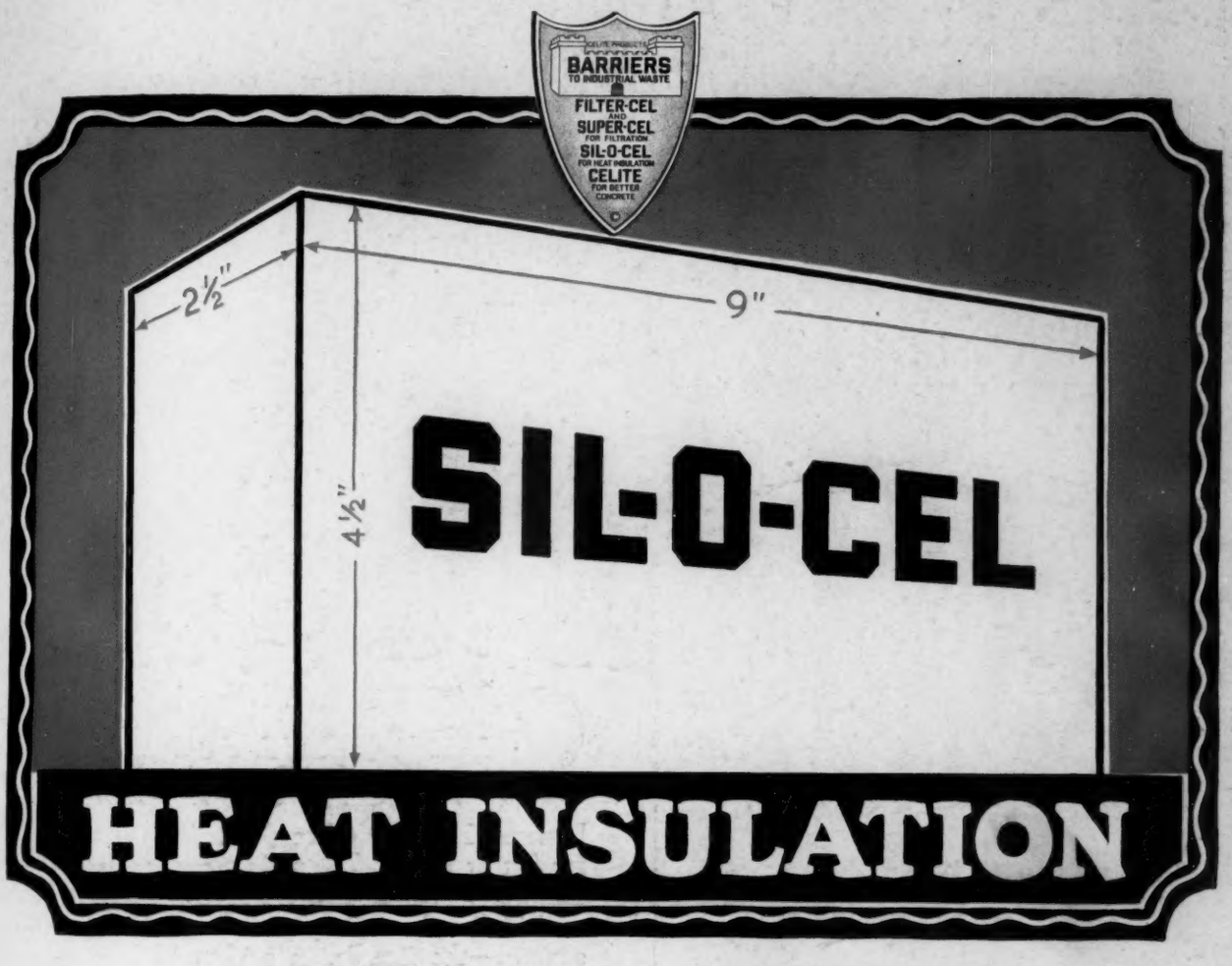
IRON TRADE REVIEW

Registered U. S. Patent Office

CLEVELAND, O., FEBRUARY 23, 1928



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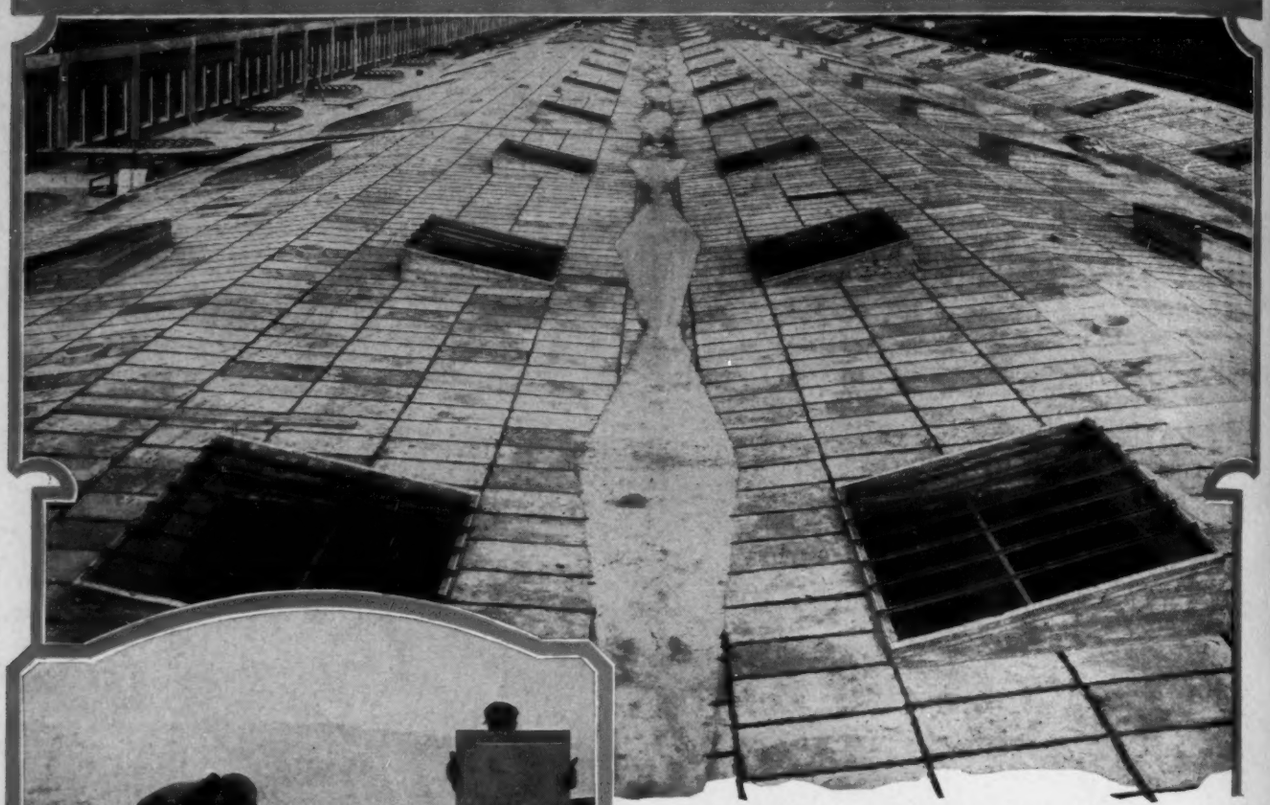

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Volume 82
Number 8

IRON TRADE REVIEW

Cleveland, O.
Feb. 23, 1928

The Authority of Industry — National and International

ARE WE BEGINNING TO SEE LIGHT IN DISTRIBUTION PROBLEM?

What Would Happen If Co-operation—Which Is Advocated by Many Executives as Solution of Present Situation—Were Given a Fair Trial in Industry?

By Charles F. Abbott

WHEN one considers that the volume of business now is as great or greater than the volume in previous years the absurdity of the present demoralization and lack of profits becomes apparent. The remedy is equally obvious.

Owen D. Young, chairman of the board, General Electric Co., has said that the solution of business problems lies in group action. Charles M. Schwab has made the statement that cordial co-operation among the various elements of the steel industry would be worth more than a billion dollars. James A. Farrell has always advocated a general adoption of the principle of co-operation in the place of ruinous competition, as a means of bringing about more stable conditions and better profits in the steel industry.

Close and mutually helpful relations between the producing mills and their intermediate industries constitute an essential step in achieving such co-operation. The mills have a well defined responsibility in the movement of their products to the ultimate consumer. Intermediate industries, otherwise designated as distributors, are in most instances essential to efficient distribution. Public interest demands service based upon the most economical system of distribution, and responsibility for such service rests equally upon producer and distributor. It continues until the public's requirements have been met. Structural steel, steel pipes, tanks, boilers and other steel products have suffered a drastic shrinkage in markets, due largely to lack of co-operation in the past between the producing mills and the distributing industries. It is believed, however, that this deplorable state of affairs is destined to show marked improvement in the not far distant future. Some months ago a committee of the board of directors of the American Institute of Steel Construction met to consider what might be done to improve relations between the mills and the fabricators. It was recognized that the present unsatisfactory relationship has been firmly established for many years and that time will be required to change it. The committee prepared a list of principles which, it is felt, provides the

Wasted Profits

THAT distorted mental attitudes are responsible for wasted profits in many lines of industry is readily apparent to anyone who even casually inspects the character of competition existing between certain individual concerns. The accompanying article is from an address "Wasted Profits," delivered before the fourth annual meeting of the Iron, Steel and Allied Industries of California, at Del Monte, Calif., Feb. 18. The author is executive secretary, American Institute of Steel Construction, 285 Madison avenue, New York.

proper basis for a constructive move in the desired direction. They are:

1. The relations between the mills and the fabricators should be cordial and co-operative.

2. The mills should definitely recognize the fabricators as the logical distributors with certain limitations which could be mutually agreed upon; and the fabricators should be protected in that capacity.

3. Mills and fabricators should join in constructive efforts to promote the use of structural steel by extending the markets therefor, as well as in other ways.

4. The fabricating units of the mills should be operated under a policy of encouragement to legitimate fabricators in their efforts to sell structural steel.

5. Mills should cease the practice of using either brokers or small

SOLUTION of business problems lies in group action, says Owen D. Young, chairman, General Electric Co.

fabricators as a means of selling fabricated steel to be gotten out by the mill interests themselves.

6. It should be conceded that the public interests will be better served if certain classes of work are handled by fabricators only; the nature and size of such work can be easily defined.

7. On all other work prices made by mill interests should be fairly determined, having in mind the conditions under which the fabricator competitor must buy his steel and operate his plant, and such prices should include a reasonable profit.

These principles were submitted to the leading rolling mill interests. Since then there have been a number of instances of co-operation which give tangible evidence of a sincere desire on the part of the leaders to work in harmony with members of the fabricating industry. A beginning has been made. The principles are not yet being applied on a national scale. Nevertheless, enough has been accomplished to lead the fabricating industry to hope for a growing degree of co-operation.

Somewhat similar principles could be applied advantageously to improve relations between producers and practically all distributing elements of the steel industry. Here we find a definite opportunity to conserve profits now being dissipated because of uncertainties that always prevail when a close co-operative relationship between producer and distributor is not established on a basis of fairness to both parties.

Salesmanship based upon a greedy determination to secure all the business in sight is the second principal cause of present demoralization of the business man's mental attitude, in the steel industry and in other industries. The fundamental principles of salesmanship, of proper pricing, costs and profits, are cast overboard as hysteria is substituted for sound judgment.

Price Stability Needed

Under present conditions the most important phase of business is selling. Every successful business man is first of all a salesman; every farmer, every lawyer, every doctor. Some doctors with profound medical knowledge make only a bare living. Others with far less knowledge are making $50,000 a year.

In pointing out that in many instances our selling policies are unsound and destructive, the writer is more than ready to acknowledge that the sales department is faced with a difficult task. To the total cost of the product the sales department is expected to add a reasonable profit and then transfer the merchandise to the buyer on terms and at prices previously determined.

Even then the task is not completed. The function of the sales department is not fulfilled until the merchandise has passed through the hands of the wholesaler and retailer into the hands of the ultimate consumer, and is placed in satisfactory service. This is the only process that completes a sale. Merchandise in the hands of the wholesaler or retailer is not sold. So long as it remains in their hands it is simply plugging up the channels of distribution.

We must bear in mind that if merchandise is sold solely on the basis of price the term "sales department" is a misnomer. "Order-taking department" would be nearer the truth. To offer price inducements as a means of concluding the sale is to write the whole story on a price tag, and even a messenger boy can then repeat it.

Real salesmanship begins when selling prices have been established on a basis of total cost, plus a reasonable profit, and when the sale is completed without concessions affecting either terms or prices. The difficult part of salesmanship is not in selling to people who have already made up their minds to buy at the price quoted, but in selling to those who either do not want to buy, or who are not willing to pay what has been determined upon as a fair price.

If all sales executives and all salesmen were as hardworking and persistent as the ordinary newsboy we would have far more justification for the assertion often made that we are the greatest commercial nation in all history. Both hard work and persistence, however, are likely to do more harm than good unless activities are controlled by sound policies.

CORDIAL co-operation in the steel industry would be worth more than a billion dollars, says Charles M. Schwab.

Study the selling policies of the automobile industry and you will find them well standardized. The prices and terms established by each company are the same to all, and there are no secret concessions. The buyer has confidence in the automobile industry because he knows that haggling with the salesman will not result in better terms.

Compare these policies with those of an industry where there is no such

standardization. Each seller's offer differs greatly as to terms and prices for the same article. Imagine the state of mind of the buyer, his confusion and lack of confidence, his inability to find a dependable basis for comparison of values.

There is no essential difference between the sale of an automobile, structural steel, a toothpick or an airplane. The names differ, but the principles are the same. But in one instance public interest is protected and confidence is sustained. In the other, public welfare is disregarded, confidence is displaced by uncertainty, and waste exacts a penalty that in the end the public must pay.

In a number of our key industries trade is severely depressed due largely to methods that have obliterated all semblance of salesmanship. If the tendency in this direction continues it threatens to develop into trade prostration of the worst kind. The best hope of checking this trend lies in convincing our executives that volume is not the sole aim of business. We must learn that fair volume coupled with fair profit is far more desirable than maximum volume coupled with minimum profit or no profit at all.

Throwing Away Profits

A man becomes dignified by the term salesman when he demonstrates his ability to enter a territory and obtain business without deviating from the terms and prices defined by his employer. The man or the organization with more than one price is soon branded as a trader whose every statement must be taken cautiously. Men and organizations are relegated to the ranks of failure when they begin to cut prices and promise concessions.

It takes salesmanship to sell a shrewd and doubtful customer, but it takes an even higher degree of salesmanship to know when to let go rather than meet his terms. To look a big order in the face and say "No" may be the mark of a master salesman.

Absence of approved selling methods in the steel industry has brought customers to the point where they regard price as most important, if not the only consideration in the purchase of steel products. The falsity of this conception is apparent to all, but if it is to be dissipated we must give salesmanship the same consideration we give other elements of our business.

Not long ago a representative of a large steel company called on a prominent customer in an attempt to obtain an order. The buyer asked his price. The salesman "hemmed and hawed." "Well," he said finally, "if you have some particular job you are estimating give me a ring and we'll see what we can do." The buyer doesn't know the price today. Would you call a man without a price a salesman?

How often do we hear of a seller so anxious to take business from his competitor that a little clever jockeying on the part of the buyer will induce him to cut his bid, although his price is already low, entitling him to the order? A cut of $10 a ton or more on structural steel, in spite of the fact that the original price submitted was the lowest, is not an uncommon incident. The extreme

GENERAL adoption of principles of co-operation in place of ruinous competition is highly desirable, says James A. Farrell

stupidity of it all makes all the more disheartening the terrific drain it imposes upon our prosperity.

Price-cutting is the most vicious practice ever introduced into business. Wherever it exists profits are thrown away. It is purely a case of outguessing competition with the price trend always downward. Failure to maintain the one-price policy leads to a deep pit, the bottom of which no organization has ever reached alive.

Furthermore, the practice is directly contrary to the interests of the buyer. While the law of supply and demand operates it is economically sound for the buyer to try to get the best possible price, but to drive the bargain below the line of a fair profit, good quality, and proper service, is poor business in the long run. Substitutions, inferior quality, and inadequate service logically follow. The buyer suffers, and pays in the end a price much greater than one based upon cost plus a fair profit.

Trade associations formed by various branches of the steel industry are doing effective work in warding off encroachments of other industries, in developing new markets and in improving standards of competition between members. But the steel industry has not yet gone far enough.

The members of the industry, even those that belong to its trade associations, are too much in the habit of asking "What has the trade association ever done for me?" They too seldom ask "What have I ever done for the trade association?"

Proposes "Institute of Steel"

Further, the steel industry is in need of intelligent, aggressive co-operation of a wider scope than is represented by any of its trade organizations now in existence. In view of the competitive struggle for the consumer's dollar, it is to the interest of every man in the steel industry to support the fight for steel. We must begin to sell the outstanding qualities of steel as a material before we try to sell steel in the form of a particular product or a particular order for that product.

The industrial battle line is far flung. The forces marshaled against steel are well organized. Against such forces the individual's efforts are wasted. Even the organization representing an entire branch of our industry frequently finds itself fighting against desperate odds. What we need is an organization that will represent the whole industry, an Institute of Steel.

An institute of this nature, properly financed and supported by the producing mills and all the intermediate industries, would have the following as its objectives:

1. Standardization and simplification.
2. Better business methods.
3. Better competitive conditions within the industry.
4. Protection of the industry against the encroachments of competing industries.
5. Broader markets and better profits for all steel products.

Such an institute would be in a position to cope successfully with the problems adversely affecting the steel industry today. Here is a practicable way to realize that degree of co-operation whose value Mr. Schwab has placed at a billion dollars.

Utilizes Waste Heat of Coke

Dry Quenching System Permits Recovery of Sensible Heat and Its Emp loyment for Generation of Steam at Any Desirable Working Pressure

QUENCHING hot coke removed from retorts in coke plants and gas works, after the process of distillation is usually accomplished by spraying with cold water. Dry quenching, known as the Sulzer system, however, is employed by one corporation in this country and permits the production of from 650 to 900 pounds of saturated steam per ton of coke, depending on the initial temperature of the coke, the steam pressure and the feed water temperature.

The system is designed to recover the sensible heat of the hot coke, and utilize it for steam generation. This is accomplished by circulating an inert gas through a container into which the glowing coke has been delivered. This gas, formed by air which has given up its oxygen in passing through the coke, is circulated through the system by a specially designed fan. After passing through the hot coke, it is admitted to a boiler where it gives up its heat; it then is returned to the coke container and the cycle is repeated. In the dry quenching process the temperature of the coke is reduced from about 1800 to 350 degrees Fahr., and steam at any desired working pressures, or hot water alone, can be produced by means of the heat thus recovered.

Considerable experience is required for the proper design and construction of a dry quenching plant. Frequently it is necessary to adapt the dry quenching system to existing plants, in which case special consideration must be given to the conveying of hot coke to the quencher and to the discharge of cool coke, so that maximum efficiency of operation may be secured.

The cooling plant may be installed either above or below the retort level, depending upon local conditions. Fig. 1 shows an installation of dry quenching equipment located below the retort level. This plant, which has a daily production of 1000 tons of coke, functions as follows:

The glowing coke is passed from the retorts, through the gate (1), into the coke transfer car (2) which is built to hold a full charge of coke, without deforming its shape. This car with its charge of coke is conveyed alongside the ovens and is discharged into intake opening (3) of the quenching chamber (4).

The intake opening is located to introduce the coke into the quenching chamber at an angle of about 45 degrees. The top of the charge lays at this angle and presents a surface of glowing coke parallel to the first row of tubes of the boiler. Thus, radiant heat from the coke mass is transmitted to the boiler. The cooled coke is discharged, through gas-tight gates (5) at the bottom of the quenching chamber, to conveyor (6) which carries the coke to bucket (7) of the elevator (8).

The cooling gases enter the lower part of the quenching chamber through the nozzles (11), pass upward through the hot coke column where they are reheated and thence to the steam superheater, boiler and economizer. Specially designed fans exhaust the gases from the economizer and force them through distributor pipes back to the nozzles

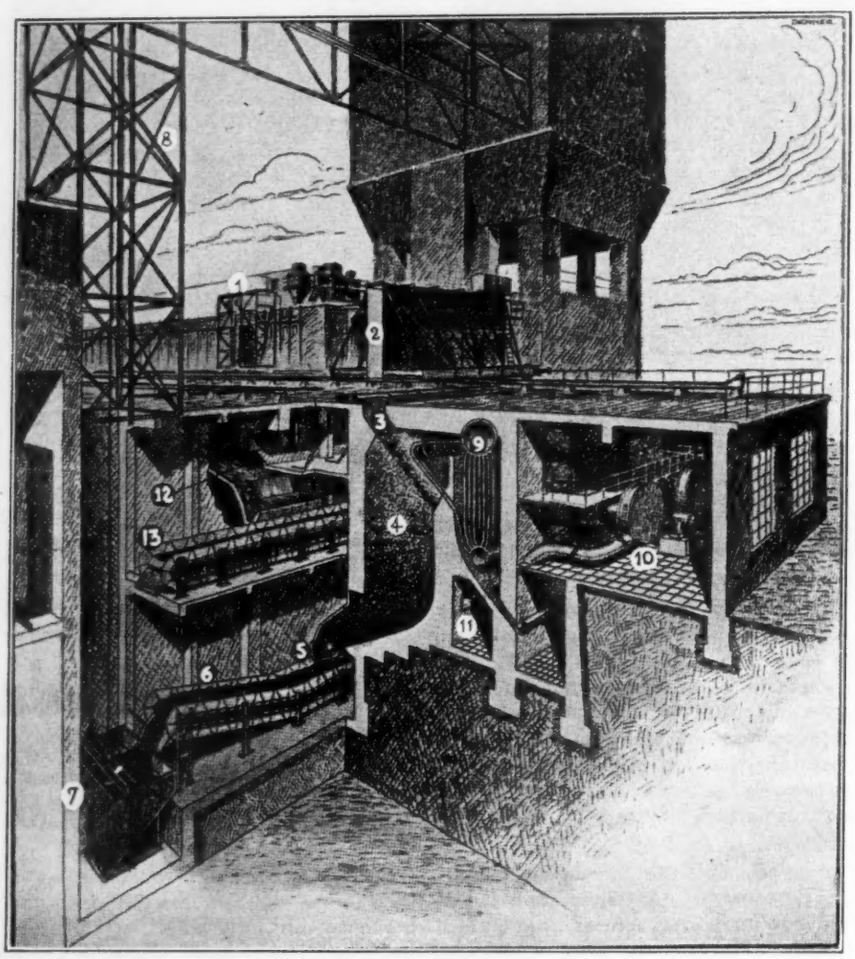


FIG. 1—SECTION THROUGH A COKE QUENCHING PLANT OF 1000 TONS DAILY CAPACITY. THE PLANT IS SITUATED BENEATH THE LEVEL OF THE COKE OVENS

completing the circulatory cycle. Either water tube or fire tube boilers are provided for the heat reclaiming plant, depending upon the steam pressure and local conditions.

As a reserve for use during boiler inspection or repairs, an inclined grate is provided for quenching the coke with water. During this wet quenching, the coke is carried from the inclined grate (12) to a conveyor (13) from which it is passed to the common coke elevator (8) which is used for either dry or wet quenching. The bucket (7) of this elevator is hoisted either to a coke storage bunker or direct to the loading platform.

Another arrangement is shown in Fig. 2. This installation was made at the plant of the Rochester Gas & Electric Corp., Rochester, N. Y. The system comprises identical units with a combined daily output of 425 tons of cooled coke. These units are built adjacent and are charged with a single skip hoist located between. The glowing coke is brought from the coke ovens by an inclined bottom coke car and dumped into the bucket of the skip hoist. When the bucket reaches its highest position, it is emptied into a revolving chute, automatically operated, which feeds the coke into whichever container is to be charged. The movements of the revolving chute and of the charging doors of the containers are operated and controlled automatically by the hoist machine.

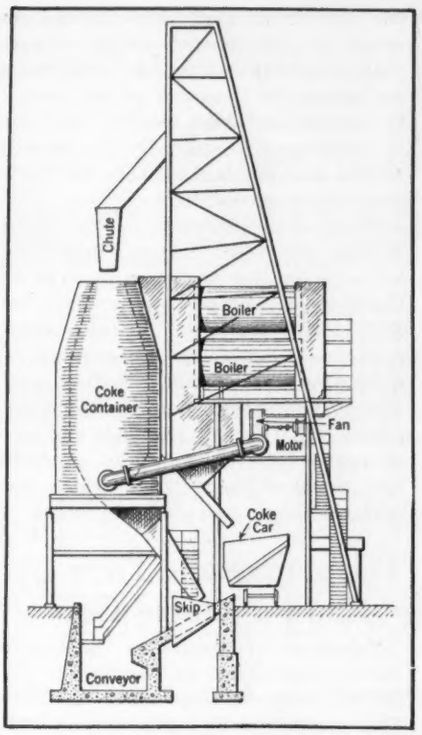


FIG. 2—SIDE ELEVATION OF A COKE DRY QUENCHING PLANT

The movement of the hoist itself is entirely automatic. The operator simply pushes the button to designate which container is to be charged, and the various phases of the operation of the hoist are so interlocked that improper functioning practically is impossible.

Each container has a capacity of about 40 tons of coke. When a container is to be charged, sufficient cooled coke has to be drawn from the bottom to make room at the top for the new charge. The amount of coke to be drawn out is determined by a measuring device that indicates the top level of the coke in the container. The coke at the bottom is drawn off through an air-tight door by a feeding device, controlled by the operator. The fans operate continuously, even when coke is being discharged. Any one point in the circulating system, can be opened without harm. All pressures through the system quickly adjust themselves with relation to the open point, zero.

Applies Metal Coatings in New Way

WORLD rights for the exploitation of a new method of coating material with metals have been acquired by British Airships Ltd., 21, Northumberland Avenue, London. This company intends to use the process principally for the coating of parts that go into the construction of airplanes and airships, but the process is susceptible of many other applications. The process may be considered as an extension of electroplating on any kind of material, the inventor having found a preparation which, when applied to the material that it is intended to metallize, renders that material conductive.

The preparation is in liquid form, and objects of any shape can be dipped into this preparation and then put into the electroplating bath. The inventor of the preparation is a Pole, but the method has been introduced by Herr Einstein, a relative of the well-known metaphysician.

According to the owners of the world rights, the process now is past the experimental stage, and it is their intention to launch the process commercially. British Airships, Ltd., have shown samples of wooden struts, rods, sheets of 3-ply wood covered with nickel, copper, gold, silver, and even chromium. Samples have been shown on which the thickness of the metal coating attains one millimeter, but it is claimed that there is practically no limit to the thickness that can be obtained. Practically any metal can thus be deposited on any material, although difficulties still are encountered in the use of two or three metals, but the owners claim that they already are on the way to solve these difficulties. Pieces of fabric that have been dipped into the preparation have also been coated with various metals, and since the fabric is practically soaked with the preparation it is rendered metallized almost throughout.

It is claimed that the improvement of this method on the ordinary electroplating process lies in the fact that any nonconductive material can be thus treated and any metal can be applied. It also is possible to deposit one metal upon another, and any part of the supporting metal that is desired to remain in its original state can be painted over with a varnish that renders such parts nonconductive. The advantages of the process are that any material can be given superficially the properties of the metal with which it is covered.

Likewise it is possible to increase the strength of materials by coating them with a thickness of metal, and wooden rods, for instance, which can be easily broken when in their natural state are considerably strengthened if covered with ½-millimeter of nickel or chromium. Many other applications also can be found, such as modifying the conductivity of a material by coating it with metal, or modifying its powers of heat absorption, etc., and it is claimed that the process may have far-reaching effects in the engineering industries.

There are many possible applications of this process in an artistic sense, and samples have been shown of objects in porcelain on which the patent preparation has been applied according to a certain design, following which the object is dipped into the electroplating bath, and the design then appears in silver or gold, according to the metal that is used. The thickness of the metal deposit can be controlled, and a sheet of wood was shown on which a thin coating of sliver had been deposited and showing the grain of the wood. Various effects also can be obtained by dipping an object from one elec-

troplating bath into another, provided that the parts which are not to be covered by an additional metal are painted over with varnish.

It is claimed that the resistance of the metal coating on the materials is greater than that obtained by other processes of metallization. On hard materials the resistance to wear depends upon the strength and application of abrasives, and it also is claimed that soft material can be folded without any cracks appearing in the metal or without the metal scaling off. No information is as yet available on the commercial cost of production.

Hand Tool Exports Meet Stiff Competition

American hand tools exported to European countries meet stiff competition in German tools which, in nearly every market, undersell competing tools, according to a report of the iron and steel division of the department of commerce. However, the report indicates, although the demand for the cheaper article is generally characteristic of this area, there are numerous instances where specialty articles and high quality tools are in considerable demand. In Scandinavian and Belgian markets the higher priced tools sell best.

Hand tool shipments to Great Britain in 1926 totaled $2,683,215, while shipments in the same year to Continental Europe were valued at $2,577,995. American manufacturers have been competing successfully on a quality basis with British producers and other foreign manufacturers and it is only the wide variance of prices between American products and those of competitors which impedes a larger sales of the former.

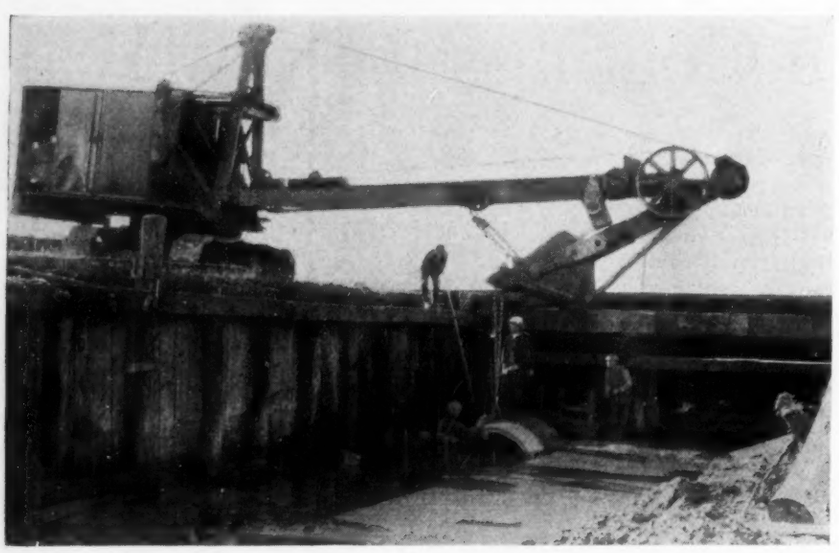
Telephones and Their Use Show Notable Gain

Telephone companies in the United States transmitted an average of 72,500,000 conversations daily in 1927. This represents an increase of 2,500,000 over 1926, according to a survey made by the Bell system. On a per capital basis, the average number of telephone conversations was 205.8 yearly during 1927. At the close of 1927 there were about 18,500,000 telephones in the United States, a net gain during the year of over 750,000. More than 2,850,000, or 15.4 per cent of the telephones now are served from dial system control offices.

The total investment in telephone and plant equipment in the United States approximated $3,500,000,000 of which about $3,100,000,000 represents the investment in plant and equipment of the Bell system. During 1927, the telephone companies of this country added about $250,000,000 to their total investment in the business. At the present time, the Bell system has about 700,000 security holders, of whom 420,000 own stock of the American Telephone & Telegraph Co.

In 1927 the Carnegie Steel Co. shipped 50,000 tons of briquetted flue dust down the Monongahela river to its Mingo plant.

Lay 4-Foot Conduit Under Water with Shovel



AN INGENIOUS method of laying pipe partly under water was used recently at the Edgewater plant of the Ohio Public Service Co. located on the shore of Lake Erie in Lorain, O. Water for the condensers formerly was taken through a 30-foot wide channel, extending from the screening house 710 feet out in the lake. The channel was formed by two parallel piers. At certain periods during the winter needle ice on the surface of the channel got into the cylinder screens. Sand also washed into the channel. It was decided to lay a permanent conduit.

How to dig a trench under water in shifting sand, lay and cement 512 feet of pipe and cover it again was a problem. Trifiletti Bros., who secured the contract, used a back digger type of shovel made by the Thew Shovel Co., Lorain.

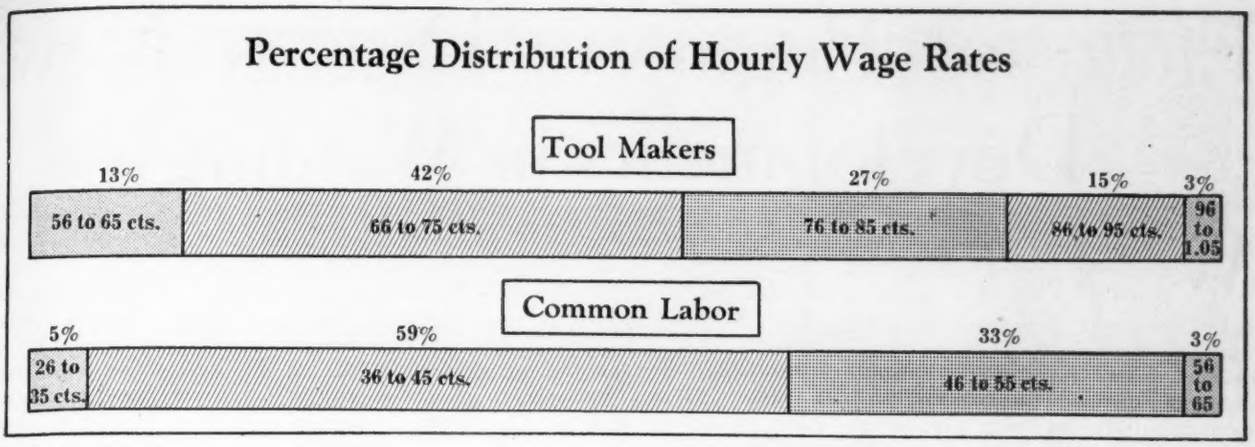
The back digger remained on the dock at one side of the channel and from that position dug the trench, set the pipe, back filled and even drove the necessary piling.

First the back digger which has a digging reach of 37 feet 8 inches scooped out a hole big enough for about two lengths of pipe. Then it swung around and picked up a pipe section by means of a pipe hook, lowered it into place and held it where wanted until blocked and tamped. The pipe is double ring reinforced concrete 5½ inches thick, 48 inches in diameter, 4 feet long, and a section weighs 1900 pounds.

Two men with shoulder-high wading boots cemented the pipe on the inside at the bottom and on the outside at the top. Strips of cement bags were laid over the fresh cement to protect it from the wash of the water and from disturbance during the back filling operation. After each section was placed, the machine back-filled before its position was shifted.

At the hot water outlet from the plant, a box was constructed of open piling, which by slightly stopping the flow of water raised its level about 10 inches. This gave sufficient head to force the water to flow through the conduit and permitted sufficient cold water to mix with the hot so that its heating effect on the intake water would not be too marked.

The piling for this box, and along the outside of the pipe where necessary, was driven by the back digger boom and bucket, with a railroad tie chained to the bottom of the bucket.



WAGE RATES IN METALWORKING INDUSTRIES MEASURED

FORTY-TWO per cent of the toolmakers in representative metal working industries in 1927 had hourly wage rates of 66 to 75 cents. Twenty-seven per cent obtained 76 to 85 cents. Fifteen per cent were in the class of 86 to 95 cents. Three per cent touched the high point of 96 cents to $1.05. Only 13 per cent fell below the majority group, receiving 56 to 65 cents.

Data obtained from 344 companies were compiled in an unusual way by the National Industrial Conference board. The figures obtained from its tables are graphically represented in the above chart, where the groups are shown proportionately. Employers were asked to provide the rate "paid for a thoroughly qualified and experienced but in no way unusual operator." Other features of the questionnaire provided for uniformity of reports. Present hourly rates do not differ materially from the general average for 1927. The averages were obtained from tabulations of figures representing eight states.

Fifty-nine per cent of the common labor employed by 425 companies in the metal working industries received wage rates of 36 to 45 cents. Thirty-three per cent obtained 46 to 55 cents. Three per cent went as high as 56 to 65 cents and five per cent dropped below the largest group, obtaining only 26 to 35 cents.

Average hourly earnings in the iron and steel industry in November were 50 cents for unskilled and 67.7 cents for skilled and semiskilled. The respective figures for foundries and machine shops were 49.1 cents and 64.8 cents. The average for workers in 25 manufacturing industries was 48.2 cents for unskilled and 64.8 cents for skilled and semiskilled.

Average weekly earnings in the iron and steel industry in November were $26.84 for unskilled and $34.44 for skilled and semiskilled employes. The weekly average for unskilled labor in foundries and machine shops was $23.53 for unskilled and $30.35 for skilled and semiskilled. For 25 manufacturing industries the average for unskilled was $23.42 and $30.15 for skilled and semiskilled.

Earnings Show Increase

The average of hourly earnings in November in the iron and steel industry was 144 per cent above July 1914, while the average of weekly earnings was 126 per cent above. In foundries and machine shops the average of hourly earnings was 113 per cent higher than in July 1914, and average weekly earnings 104 per cent higher. The average hourly earnings in 25 manufacturing industries in November represented an increase of 132 per cent over July 1914, while average weekly earnings reflected an advance of 113 per cent.

Toolmakers' Hourly Rates

Cumulative Percentage Distribution

	96 cents and above	86 cents and above	76 cents and above	66 cents and above	56 cents and above
Average of eight states	3	18	45	87	100
New York	....	15	52	90	100
Connecticut ..	....	8	27	81	100
Illinois	24	51	79	97	100
Massachusetts..	....	9	22	62	100
Michigan	2	25	55	92	100
New Jersey....	6	44	75	100	100
Ohio	....	4	33	81	100
Pennsylvania..	....	10	34	93	100

With June 1920 representing 100 as the base of index figures for employment, November in the iron and steel industry was 67; in foundries and machine shops 71.9 and in general manufacturing industries 78.3.

The average number of hours worked in November in the iron and steel industry was 52.6; and in foundries and machine shops 46.9. The average for 25 manufacturing industries, 47.1, was the lowest since 1924.

"Employment data are attracting increasing attention because of the far-reaching significance of the movements which they reflect," the board comments. Until a year or two ago, fluctuations in employment were regarded as evidence of a proportionate change in manufacturing activity. This belief, which experience had proven to be true in the past, was based upon the assumption that industry as a whole required about the some number of workers to produce a given output. But a rising index of production with a declining index of employment during the last two or three years has indicated that conditions are changing. "Increased mechanization and improved efficiency and processing have reduced the labor requirement per unit of output so that industry can now function satisfactorily and more economically with a smaller labor force than was required even in 1923."

The second annual welding conference sponsored by the North Texas Agricultural college, Arlington, Tex., Feb. 7-8, was largely attended by the metal working industries of the Southwest.

Electrical Engineers Discuss New Developments in Welding

WITH over 1500 members and guests registered, the annual meeting of the American Institution of Electrical Engineers last week at New York, took its place as one of the largest in the history of the association. The session on communication afforded lively popular interest because it was held jointly with a meeting in London of the British Institution of Electrical Engineers. This is the first time in history that such a joint meeting between groups in England and United States has been attempted. The two auditoriums were connected by wireless and loud speakers so that the New York group could clearly hear a paper read in London, and the London group could hear discussion of this paper as presented by speakers at New York. Conditions for communication were perfect and the voices of the London speakers came into the New York auditorium as clearly as if they were a few blocks away.

The New York convention was featured by many important papers and by the presentation of medals. The Edison medal was presented to William D. Coolidge for meritorious achievement in electrical science and particularly for his work in the incandescent electrical lighting art and the X-ray art. Mr. Coolidge is assistant director of the research laboratory, General Electric Co., Schenectady, N. Y. The John Fritz gold medal was awarded to John J. Carty, vice president, American Telephone & Telegraph Co.

The intensive study of arc welding technique which has marked the last two years in this field was outlined in the first two papers presented in the arc welding session. These papers were by J. B. Green, president, Fusion Welding Corp., Chicago, and P. Alexander, research engineer, General Electric Co., West Lynn., Mass. Mr. Green showed with a remarkable set of moving pictures the variations in the character of the arc caused by different chemical and structural variations in the surface materials. When electrodes are coated with various substances, for instance, with thorium oxide or berylium, the arc varies in size and chemical action. Mr. Green drew a conclusion from careful study of the photographs that there are four different recognizable types of arc and that an experienced observer could tell from the arc the nature of the electrode.

Mr. Alexander's paper described elaborate tests made with various gases passed through the arc during welding. Various elements in these gases are broken down or disassociated as they come in contact with the arc, but within the space of a fraction of an inch are reunited with the resultant reappearance of a large part of the energy required for their disassociation.

Obverse and reverse sides of John Fritz gold medal, awarded to John J. Carty, vice president, American Telephone & Telegraph Co.

Mr. Alexander's paper was discussed at considerable length by Dr. Elihu Thompson, who was introduced as the father of electric welding. Following the discussion, J. C. Lincoln, president, Lincoln Electric Co., Cleveland, who was chairman, demonstrated a new phenomenon which had been developed at his plant. The apparatus for his experiment on the stage of the auditorium consisted of a carbon rod inserted between specially shaped heavy copper electrodes. The arc was drawn between these electrodes with a result that the end of the carbon rod became vaporized or disintegrated. The small particles of carbon were blown rapidly through the arc to cause a flame several inches at right angles to the direction of the arc.

The second part of the arc welding session was given over to practical applications. A. M. Candy, welding engineer, Westinghouse Electric & Mfg. Co., described many fatigue tests of welded structural members. These tests were made in comparison with riveted members of similar design, and the results were shown by lantern slides. In each case the welded joints resisted greater loads and longer periods of oscillation than riveted joints.

Discussion of Mr. Candy's paper brought out the fact that the greater rigidity of a welded joint must be considered by engineers, as it sometimes is desirable to introduce the flexibility of a riveted joint. The principal discussion of this paper was presented by E. H. Ewertz, past president, American Welding Society, and consulting welding engineer, New York.

A. P. Wood, General Electric Co., presented a paper describing the extensive welding which has been done during the last two years by the company on its large electrical machinery.

Two technical sessions on electrical machinery were held Wednesday. These tended to show that designers in this field are keeping abreast of scientific development.

In a paper read Friday, O. J. Rotty, Union Electric & Power Co., and E. L. Hough, of General Electric Co., described development in the automatic control of electrical apparatus. Progress in this field is of a labor saving nature comparable with the same spectacular work on production machine tools. Speakers at the banquet Thursday evening included Bancroft Gherardi, vice president and chief engineer, American Telephone & Telegraph Co.; Michael I. Pupin, professor of science, Columbia university, and J. V. W. Reynders, past president, American Institute of Mining and Metallurgical Engineers.

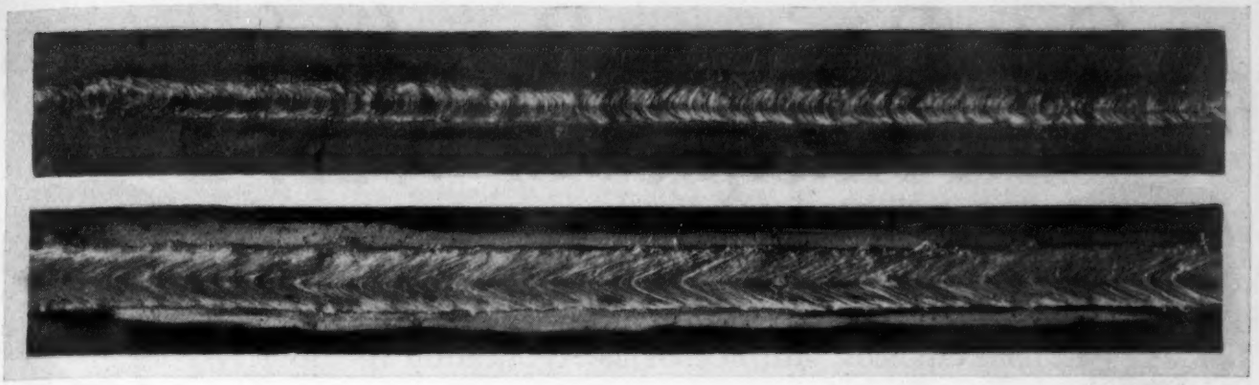


Fig. 1—(Top) Ordinary metallic arc weld and (bottom) arc weld made by the electronic tornado. Note the greater uniformity and smoothness of latter

New Process May Cut Welding Cost

FURTHER developments of the electronic tornado, discovered about a year ago in the research laboratories of the Lincoln Electric Co., Cleveland, seem to throw new light on the ductility, strength and cost of welds made by electric arc welding. This new process, based upon an electric phenomenon which was originally considered as of only scientific interest, has been further developed so that its commercial application now seems to be assured.

Not only are the welds produced by this new process far more uniform in structure and ductility but the cost of welding ½-inch plates, including operator's time, electric current and carbon electrode will not exceed three cents per running foot of weld. The cost of welding plate of other thicknesses will be proportionate.

While at present it is not thought that the new process will affect manual arc welding, it is believed that the cost of welding equipment that can be welded automatically will be materially decreased.

Heretofore metal deposited by electric arc welding has partaken of the characteristics of cast steel. It is said that by the new process the metal deposited in the weld has equal or even better physical characteristics than the metal of the plates joined by welding. This is a result of the purifying effect of the electronic tornado.

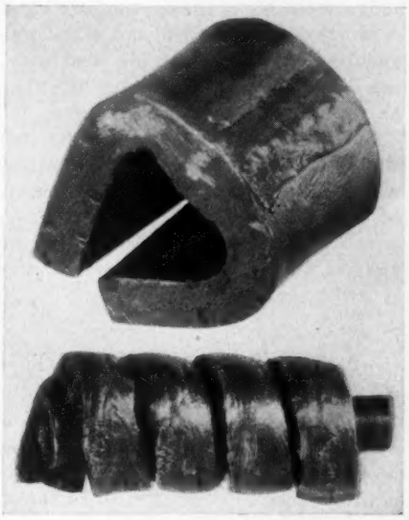


FIG. 2—WELDS MADE BY THE NEW PROCESS HAVE BEEN SUBJECTED TO MANY KINDS OF STRAIN AND SHOW GREAT TENSILE STRENGTH AND DUCTILITY

Test pieces of electronic tornado welds have been sawed from the plate and the resultant bars twisted through 1080 degrees or three complete revolutions without showing any indication of failure. Bars cut from welds are twisted cold and tied into knots without any sign of fracture.

An incidental advantage of electronic tornado welding is the smooth finish which is obtained on the welding bead. This in part is caused by the higher speed of travel of the welding heads and is in part inherent in the new process. This is illustrated in Fig. 1.

Figs. 3, 4 and 5 show the difference between the common arc weld and the new process. It will be observed that the grain size in the new process is exceedingly fine and uniform, whereas in metallic arc weld it is irregular and coarse. The crystal structure of the electronic tornado weld is almost identical with that of mild steel. The only practical difference is in the size of the crystals themselves.

Total Coke Output Gains

January output of beehive coke was 376,000 net tons, a decline of 1000 tons from December, while by-product coke at 3,880,000 tons increased over the 3,646,000 tons of December, states the federal bureau of mines. Beehive coke production in the week ended Feb. 12 was 91,000 tons, a gain of 3000 tons over the preceding week.

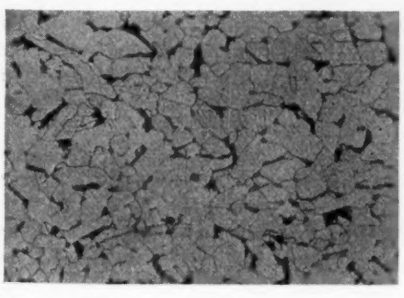


FIG. 3—CRYSTAL STRUCTURE OF COMMON STEEL PLATE (X 100)

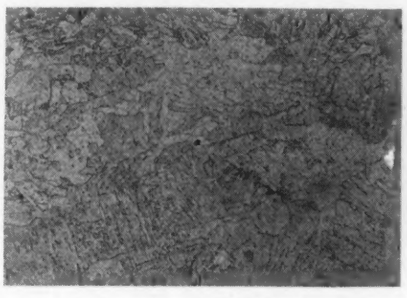


FIG. 4—STRUCTURE OF ORDINARY METALLIC ARC WELD (X 100)

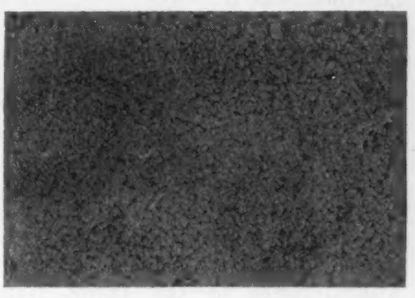


FIG. 5—STRUCTURE OF ELECTRONIC TORNADO WELD (X 100)

Can Business Benefit from Principles of War?

Will Fundamental Rules of Combat Serve Manufacturers in Their Struggle with Competition? Strategy of Napoleon and Foch Has Application in Industry

By Robert E. Kinkead

Fourth Article

LET us therefore conclude that:

1. In strategy as in everything else a leap into the unknown is dangerous; we have no right to substitute for facts ascertainable the creations of imagination. From facts alone can a logical maneuver be planned.

2. In strategy as in tactics no maneuver must be undertaken which causes dispersion, unless we have first assured ourselves the possibility of being able to regroup our units when necessary."—FOCH

THE department of military intelligence is the counterpart of research in competitive organizations. In commercial affairs research is frequently subdivided into commercial, scientific, statistical, and the like. The object of all research in competitive enterprise should be the same as the object of intelligence in military affairs, namely to keep the high command fully advised on the status of the struggle and to forecast so far as possible the course of events in the future. The duties of high command tend to make it difficult to see the situation from an abstract and disinterested point of view.

The duty of the research department should be to furnish the high command with a steady flow of pertinent facts. To be of any value whatever facts must be separated from opinion so sharply as to leave no doubt whatever as to which are facts and which are opinions. The interest of the research department may roam far afield but the object must never be lost sight of, to provide facts upon which campaigns against the opposition may be waged more effectively.

In competitive combat no less than in military warfare the campaign is waged against an enemy who is moving constantly, and who is equally anxious to deliver the knockout. From field reports, the research department should furnish the high command with analyses of the known facts from which the high command may judge what is on the opposition's mind. A worthy opponent will not stand still and be shot at, but if his next move can be predicted he can be hit when he arrives at his destination.

Such research is a necessary activity to a competitive organization which is responsible for large amounts of invested capital. No other insurance can be purchased so cheaply against a surprise attack on the part of the opposition.

* * *

Sales Department

EXCEPT where the product is of small money value and is sold over the counter, the salesman is the man with the bayonet in the competitive army. Products of comparatively high value are sold by a salesman to a purchaser.

Salesmen constitute the force which goes over the top and clears the opposition from the field and gets the order. The manufacturer's salesman is the man who finally fights the enemy at close quarters. All of the elements of strength which have been built up in the competitive organization have been developed to enable him to get the business in spite of the opposition which surrounds him. To develop the maximum competitive strength, the development of salesmen who have selling power is necessary. Since the tendency of recent years has been to under-rate the place of the salesman, due to the astounding results which were first obtained by national advertising, the matter of selling power of salesmen will be discussed in some detail.

The object of the salesman's activity is to get orders. That is his only legitimate activity and if he has been trained to do that he should be permitted to do nothing else. To permit him to do anything else is to waste the competitive power of the organization. He should be furnished with a list of the people in his territory who are prospective buyers and permitted to spend all of his time selling them.

While some reports are necessary the order to make them should come from his immediate superior, the salesmanager, and no one else. Unnecessary paper work has ruined the combative spirit of more salesmen than practically all other causes combined. When the salesman is to be praised or reprimanded no one besides his immediate superior, the salesmanager, should do the job.

The training of salesmen aside from mere technical training in what the organization has to sell should be largely a matter of how to sell himself. Few buyers will do business with a salesman who has not sold himself and conversely most sales are made because the buyer wants to buy, and finds reasons to support his action after making the decision. Buyers may be led but not driven. Winning the buyer's confidence and esteem tends to create the desire to buy from the man who has accomplished this.

Competitive power of tremendous force may be won by the salesman who understands the art of making people want to do his will. A salesman is first of all a salesman. If he happens also to be an engineer or a craftsman he is that much ahead, but if he cannot make people like him and want to go along with him he is not a salesman. The art of selling himself is so important that he should have the right to call on engineers or other technical experts for assistance when he needs it so that he may never lose sight of his main objective which is first to sell himself and then to sell his product.

Morale of the salesman is kept up by the same methods as morale of the man with the bayonet is kept up. Confidence in his leadership, and ade-

quate support, give him the feeling of being an irresistible force and sends him into the struggle with the belief that he cannot lose.

If a general sends his troops against machine gun fire a few times in spite of failure of the artillery to function, he will soon discover that he has troops who have no morale and will not advance in the face of enemy fire. On the other hand when the troops know that every ounce of power at the general's command is back of them they will advance in spite of 50 per cent and even 70 per cent casualties. A salesman cannot fight a competitive campaign alone. Given advertising preparation in advance, close contact with his superior and adequate support in action he will beat the opposition or wreck himself trying to. Properly trained and directed salesmen will have to be held back rather than forced to work by clever and complicated bonus systems.

No impersonal system has ever been devised which will either make soldiers or salesmen effective. Leadership cannot be given by form letters. When preciously successful salesmen will not work, and the "buck" begins to be passed around, the trouble will be found in the leadership of the competitive organization. A salesman has at least a normal amount of combative energy which will be expended on the competition unless there is something wrong with the officers above him which turns his combative energy into internal friction.

* * *

Even for these bold leaders, leadership does not consist merely in charging like a wild boar on the enemy. One must act with full knowledge of conditions, proportion the aims and objectives to the means at hand. One must first reconnoiter.—FOCH.

The subject of organization of forces in preparation for competitive struggles has been discussed elsewhere. We may now consider the matter of preparation for the struggle in a specific "deal" or "proposition."

In the study of military strategy we find that battles fought by the masters of the art of war are never accidents. They are never merely collisions between opposing forces who happen to cross each other's paths. Successful generals always have maneuvered to bring about a decisive battle on terms favorable to themselves. They are continually seeking battle under favorable conditions. A battle is the final result of carefully laid plans. Successful competitive effort must be governed by the same principles. This involves:

1. Complete knowledge of the conditions in the proposed field of action.
2. A definite plan for offensive action.
3. Maneuvering of forces so that when the final blow is struck, the attacking force will have a superiority at that point and at that time.

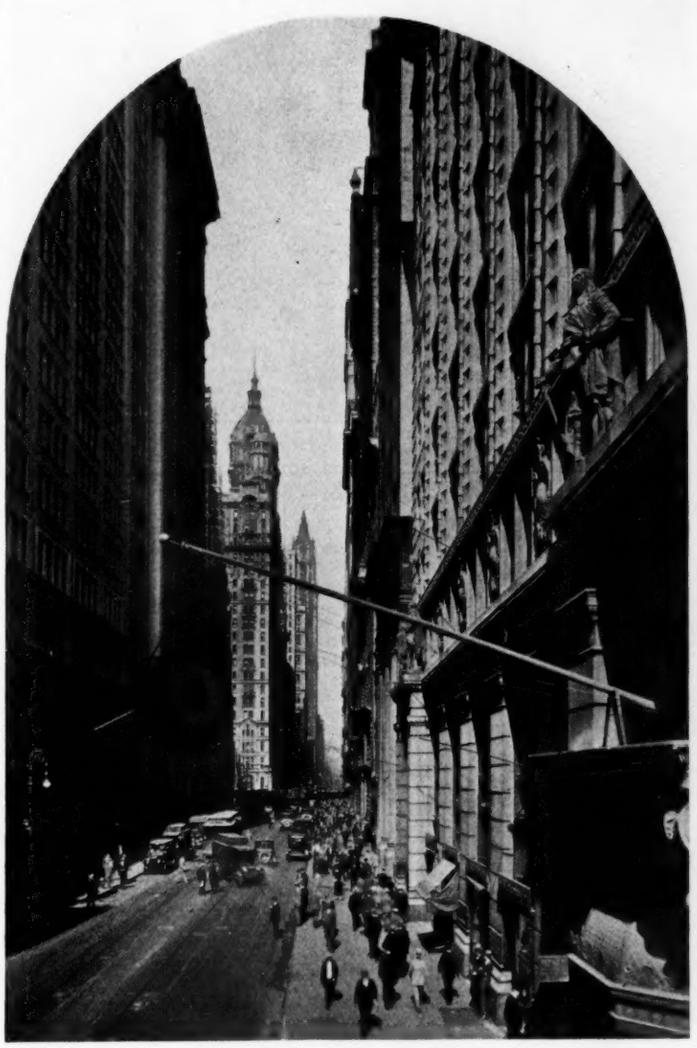
Many examples are available of cases in which a weak competitor discovers a logical point of attack against his opposition. He proceeds at once to action. The net result is that he stirs up the prospect, gives the opposition time to get on the job and finds that he has merely made it easy for the opposition to get business which it would not otherwise have obtained. The weak competitor has violated all of the principles of competitive strategy. He has expended his forces as a result of a desire to attain a certain object. Intelligence, judgment, a plan based on the mission and the forces available, a method of bringing all of his forces to bear so that the decision may be reached before the opposition can bring its forces to bear on the action, all of these things have been overlooked.

Preparation in the proposed field of action involves the following:

1. Knowledge of the prospective buyer's needs, problems, and motives. What is the prospect trying to accomplish? How will the proposed purchase help the purchaser accomplish his desire? What proof is there that the proposed purchase will accomplish the desired end? Would a court of reasonable men approve the purchase? Who in the purchaser's organization will really decide the issue. Who in the purchaser's organization will be asked for opinions?

2. Does the proposed plan of action contemplate direct action on the man who will decide? Does it provide a complete and thorough presentation of the whole case? Has it been criticized by a disinterested party to develop the weak points in its presentation? Has a plan been developed to reach the man who is to decide under such conditions as will insure his undivided attention to the matter?

3. Maneuvering for superiority of force at a given time and at a given point involves co-ordination of the entire forces of the organization on that particular "deal." Have the technical forces been given an opportunity to comment on the proposed action? Has the credit angle been worked out? Is the advertising department in-



In the swirl of the great business district of Broadway, reputed to be the cradle of supersalesmanship. Broadway, N. Y., or Battle Creek, Mich., the principles of real salesmanship, however, are the same

volved? Have other salesmen who have handled similar "deals" been consulted? Is the man who is to present the proposition the best man available for the purpose? Has the whole proposition been laid out with the idea in mind that the opposition will attack vigorously as soon as they find out what is going on? Is the proposition proof against the usual methods of attack employed by the opposition? If the victory is won, will the cost of preparation be justified?

* * *

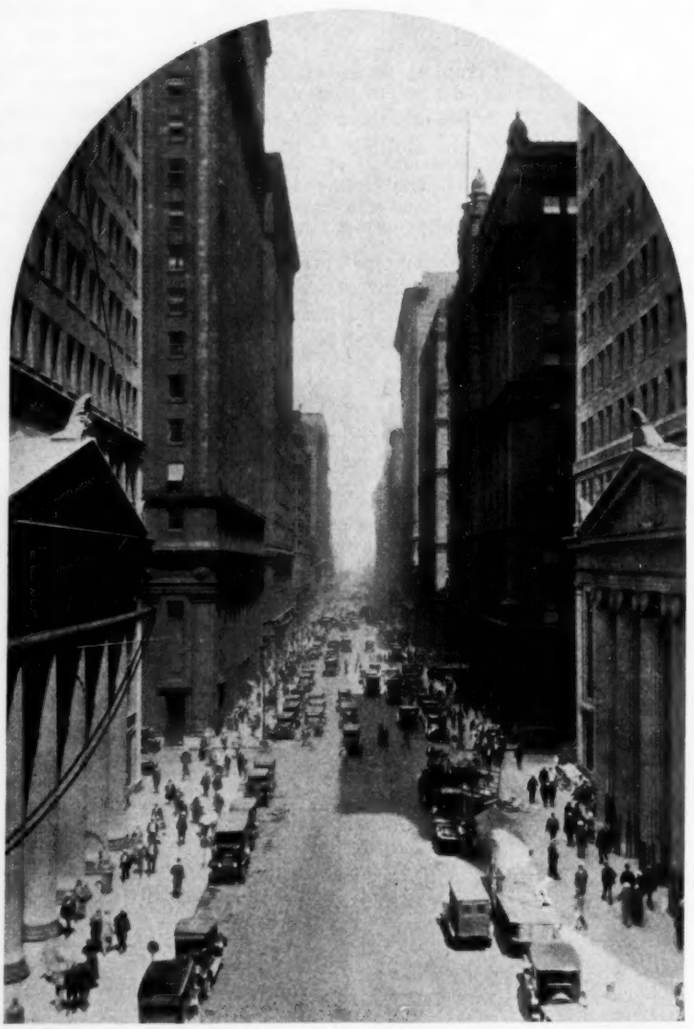
In our epoch which believes that ideals are unnecessary, that science and realism govern all things, we still find, to avoid mistakes and disasters, the sole observance of two moral principles: Duty and Discipline. And these two principles to provide success require Knowledge and Reasoning.—FOCH.

In a competitive organization, as well as an army, friction is always a factor which must receive consideration by the strategic command. Between the intellectual conception of a plan of action to be carried out by an organization and actual execution of that plan there is always a lag due to internal friction which tends to prevent its perfect execution. This internal friction in itself is a natural phenomenon and must be taken into account by the strategic command. The figure in which friction appears as a deterrent to the execution of a plan depends upon the structure of the organization, morale, discipline and all other factors which affect the combative strength of a militant group.

Friction tends to increase in geometric proportion as the number of individuals involved in an action increases. Yet the competitive power of an organization depends to a considerable extent in employment of considerable numbers of individuals. It is evident that the quality of the strategic command must be the highest where the greatest numbers of individuals are grouped into one organization.

The strategic command must not only minimize the degree of friction to make the organization a mobile unit which goes into combat as a whole, but must also be able to estimate accurately what delay there will be due to it in any given case.

An army commander cannot offer as an excuse for losing a battle that his artillery did not arrive in time to lay down a barrage as a protection to his advancing infantry.



Where the busy salesmen swarm. LaSalle street, Chicago—"headquarters" for an army of business emissaries, and "hunting ground" populated with prospects

If the artillery did not arrive in time it is because the commander did not know how to co-ordinate his forces so that the artillery would be in position when and where it was required. It is no excuse for a commander that a subordinate failed to function according to the predetermined plan. He should have foreseen that possibility and provided for it. The purpose of strategic command is to win battles and it is given authority to make such disposition of forces as are necessary to accomplish that purpose.

Time is a controlling factor in competitive actions. Unless all the forces can be brought into the proper time relation with each other the maximum power cannot be delivered against the opposition. Friction tends to destroy timing of movements of parts of an organization with the result the action carries only a fraction of possible amount of power.

Overcoming friction is not so easy as it might appear. Even under the most rigorous military discipline in which orders are enforceable under penalty of death friction saps the power of the advancing army. In competitive organizations where penalty of failure to execute orders with respect to the function itself, as well as to time, may not be punished severely, strategic command has a far more serious problem. Discipline and morale are the antidotes to the poison of friction. Neither discipline nor morale are purchasable commodities. Attempts to instill these qualities into an organization by the payment of high salaries alone has never been successful. The arbitrary payment of either high or low salaries on any basis than that they are earned is always destructive to morale and discipline. Friction may be minimized to a point at which it may at least be accurately estimated in a competitive organization only when the subordinate leaders respect the commander and have acquired that intellectual discipline which compels their execution of the intent of an order. Without that discipline of intellect which reads through the letter of instructions and sees the true spirit of them, friction is always an imponderable quantity.

The disciplined subordinate does not permit himself to question the spirit of an order until the order is completely and precisely executed, yet he will not hesitate to forward promptly to his superior facts which might change the character of the instructions next received. He will proceed

on the moral conviction that the orders were based on information which he does not possess. He will allow nothing to interfere with his effort to carry out the spirit of the orders he has received, short of new instructions from his superior officer.

Discipline fails and friction develops when the strategic command issues advice in place of orders. In this case strategic command has failed and the organization is without command which places it in an entirely analogous position to an army in battle without a commanding general.

Nothing can wreck a competitive organization more quickly than indecision on the part of the strategic command. Discipline and morale disappear to be superseded by mob spirit and dissension. The competitive commander who issues a price book, a catalog and an expense account to its salesmen and tells them to go out and whip the competition cannot become an important contestant in any field worthy of competitive effort. Such an organization develops into a loose association of commercial "hijackers" whose business ethics are on a par with their lack of ability along organization lines.

Morale is the logical outgrowth of intellectual discipline. No competitive organization can be supremely effective without high morale. Morale comes from the moral conviction that the organization exists by necessity, that competition is waged in the interest of the customer, that the strategic command is competent and is executing a plan which is economically sound.

High morale in an organization is based on the presumption that there is external opposition to the carrying out of its purpose. There must be external resistance or there cannot be high morale. High morale in an organization may come from an understanding by each subordinate leader of the forces which are to be overcome and the means which have been adopted to accomplish the purpose. Knowledge of the status of the struggle is in many cases an irresistible call to combat which welds the organization into a militant unit with the highest possible degree of morale.

New Engineering Index Proving Popular

Subscribers to the new weekly card engineering index service initiated by the American Society of Mechanical Engineers on Jan. 1 are expressing their full approval.

A circular just issued describing the details of the new service is available to interested parties by addressing the society at 29 West Thirty-ninth street, New York. The literature of engineering is divided into 13 main classifications and 118 subclassifications so that the subscriber may secure only those classifications in which he is particularly interested. Recent inquiries from France, Austria, England, Japan, Russia and other countries indicate the new service to be as of much interest to engineering abroad as in this country.

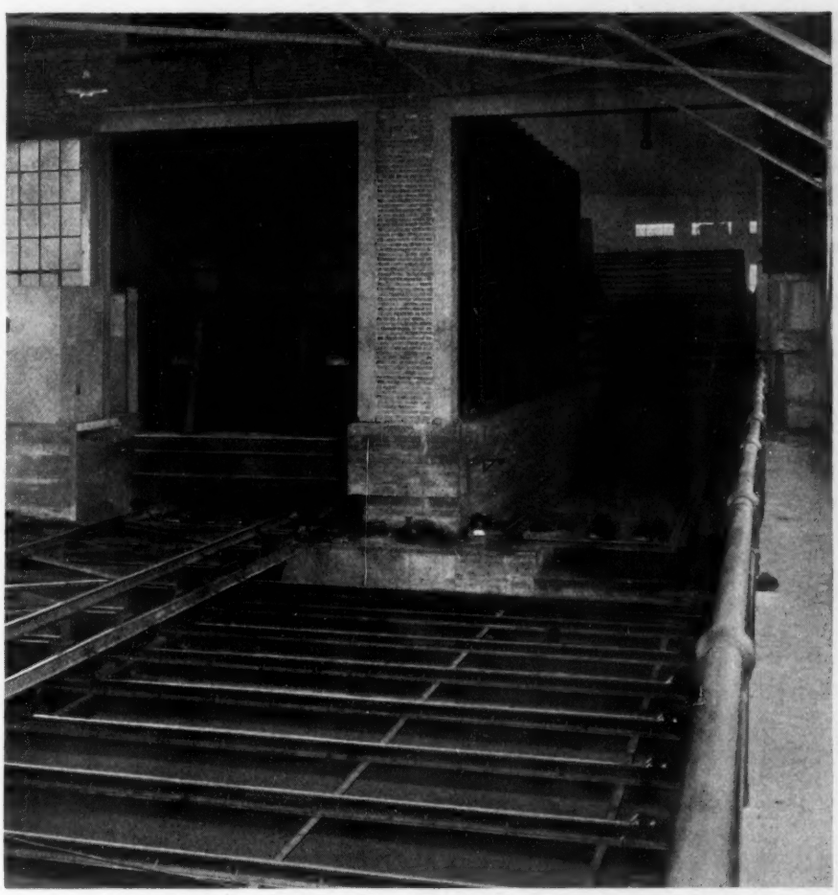
Oven Can Heat Treat 400,000 Pounds of Steel at One Time

ONE of the largest electric heat treating furnaces in the world was installed recently in the plant of the A. O. Smith Corp., Milwaukee. The oven, which is understood to be practically three times the size of any similar one previously built, is large enough to accommodate a standard box car. It will heat 400,000 pounds of metal at one time to a maximum of 1650 degrees Fahr. Twenty-seven standard freight cars were required to transport the materials for the oven to the plant.

The installation marks a notable advance in the use of electricity as a heating agent, as well as an advance in heat treating methods. The furnace has an installed capacity of 3000 kilowatts, and will use 1,400,000 kilowatt hours of energy a month. This is about equivalent to the energy used in 35,000 homes.

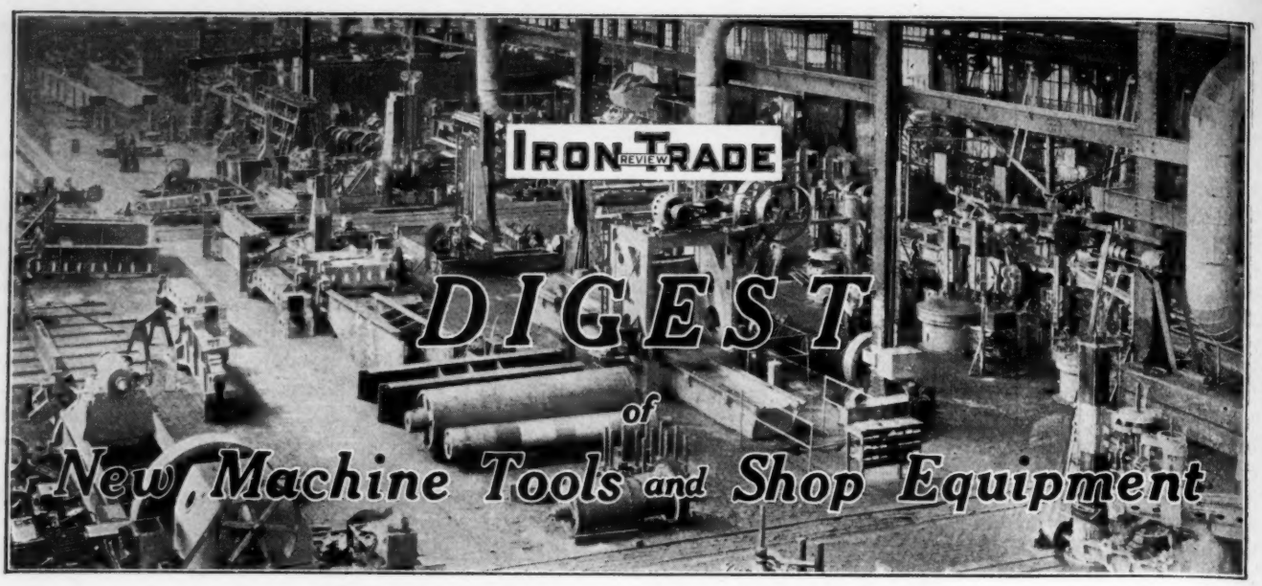
The oven is for heat treatment of steel after fabrication. It will be devoted principally to annealing oil refining and other pressure vessels, weighing up to 200 tons each. The vessels will be charged into the oven on special sand sealed furnace cars, mechanically operated and electrically controlled from a switchboard.

Specially constructed cooling chambers are placed in a new building opposite the furnace for gradual cooling of the heat treated metal.



A special rail system for loading and unloading the oven is a feature of this giant among electric heat treating units

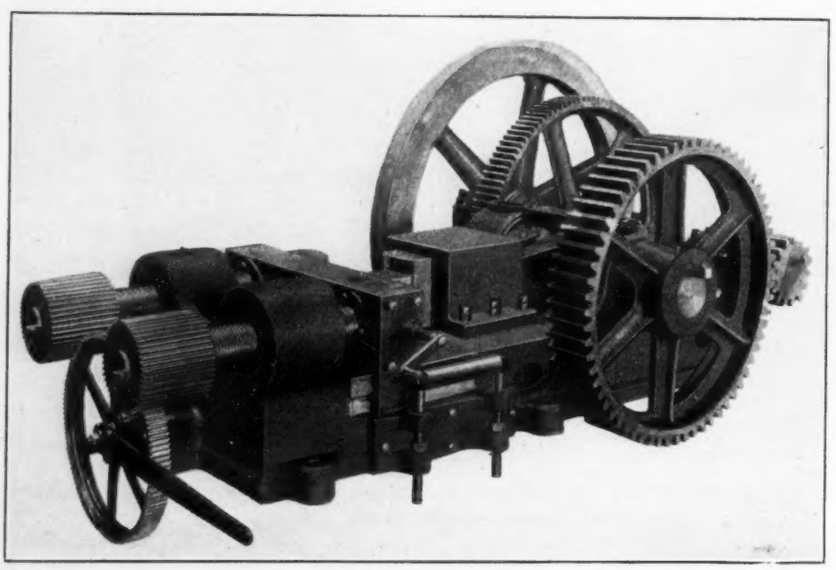
Heat treating of the first vessel, an oil cracking still weighing 140,000 pounds, was successfully accomplished late in December before a large group of electric company officials and engineers.



Press Is Designed with Large Single Head

No. 50

Sutton Engineering Co., Pittsburgh, has developed a large single head general purpose straightening machine for handling pipes, tubes, rails, structural steel and bars of all shapes. This straightening press is built in various sizes, the one illustrated being capable of straightening small sections up to those having a maximum dimension of 12 inches. It also straightens 2 x 12-inch flats, 7½-inch squares and 8½-inch rounds. A pressure of over 300 tons is generated at the ram. The main frame of the press is of steel. The drive gears are of cut steel, the cross bars are of forged steel and the cross head is of cast steel. The rest blocks and plunger head can be arranged to allow the use of easily removable dies. The blocks can be designed specially for any section.

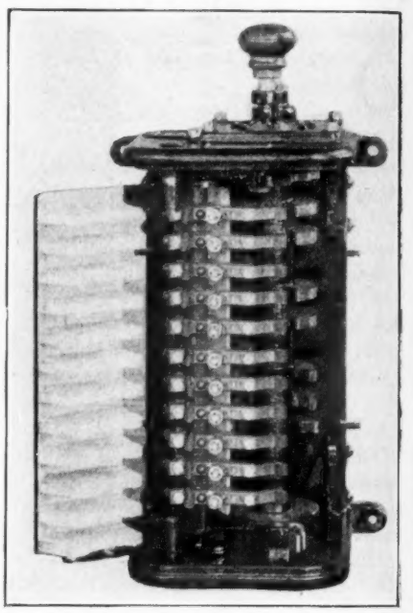


No. 50—General purpose machine for straightening various sections

New Switches Suitable for Various Motors

No. 51

General Electric Co., Schenectady, N. Y., has announced three new drum switches for use with squirrel-cage and slip-ring motors. These have been designed particularly for the control of small cranes, hoists, machine tools, etc. One model is a primary resistance drum switch for squirrel-cage motors, providing four points forward and four points reverse. It is suitable for motors that do not have an overhauling load. A second model is a primary resistance switch for squirrel-cage motors, providing four points forward and one point reverse. This switch is suitable where there is an overhauling load. On hoists this switch should be used where a worm gear or automatic mechanical load brake is not used. The third model is a primary and secondary reversing switch for slip-ring motors, providing five points forward and five points reverse. It is suitable for starting duty or speed regulating duty. All three switches have identical frames, but the cylinder developments are different. Horizontal handle, vertical handle and rope wheel and spring return attachment are interchangeable.



No. 51—New drum-type motor switch

Opening Machine Handles Wide Sheet Packs

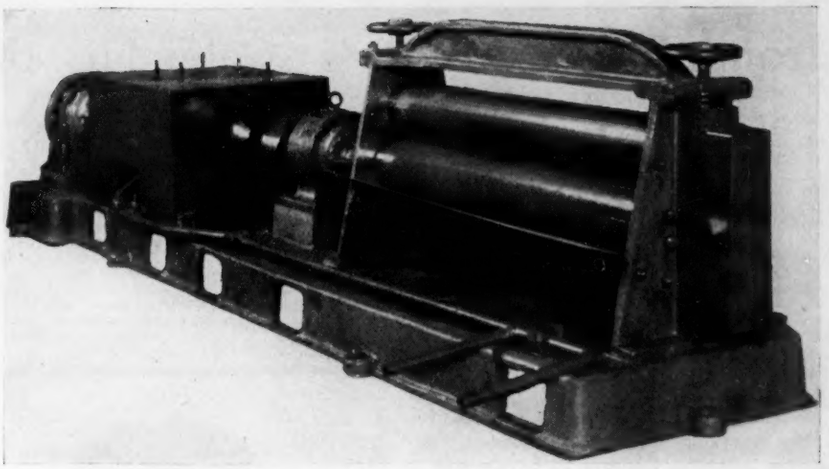
No. 52

A sheet opening machine, for packs up to 96 inches wide has been developed by the Aetna-Standard Engineering Co., Youngstown, O. The machine is equipped with 4-high rolls,

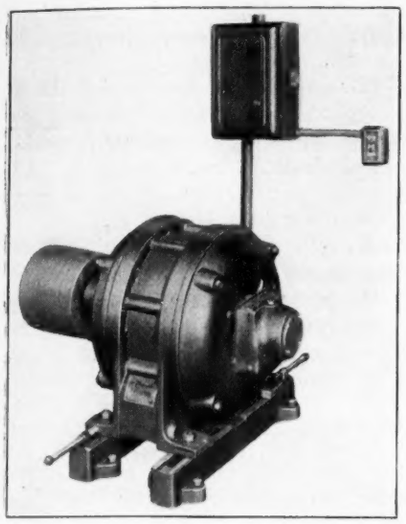
each having a face of 96 inches. The rolls are operated at 48 revolutions a minute through a reduction gear set by a 1150 revolution per minute reversing motor. An opener designed for stock 36 inches wide is shown in the accompanying illustration.

Sheets can be served to the machine either on an angle when they are to be opened only on one corner, or straight when the ends are to be entirely opened. A pack can be fed from either side of the machine. Should a pack of six sheets be stuck tightly, it would be desirable to first open one sheet from the pack going in one direction and another sheet from the pack going in the opposite direction. In this manner no time is lost in handling the pack from one side to the other. The work is executed by one operator and a helper.

The unit can be moved to the position most convenient to the pile of stickers, which obviates the continuous handling of sheet piles from one point to another. The overall length of the unit is 16¼ feet and the overall width 3 feet 10 inches. For convenience in handling the packs, a light roller table is provided on both sides of the machine.



No. 52—Motor driven opening machine for packs 36 inches wide



No. 53—Squirrel cage induction motor

Induction Motor Starts on Full Voltage

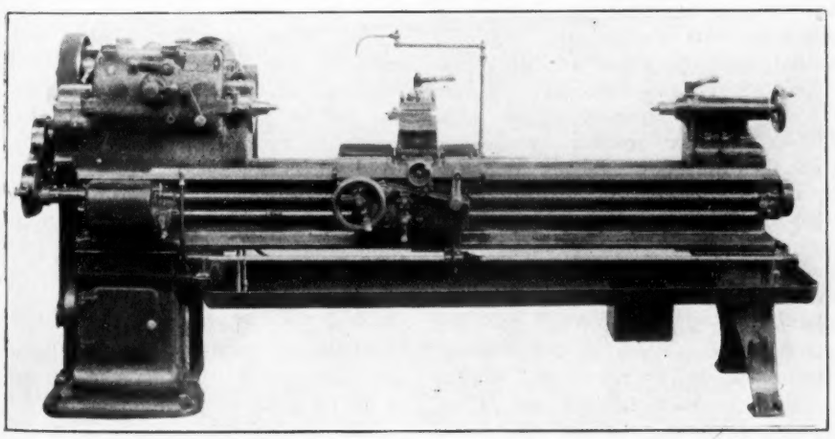
No. 53

Allis-Chalmers Mfg. Co., Milwaukee, has placed on the market a line of squirrel-cage induction motors suitable for starting on full line voltage. These motors are normal torque, high reactance machines and will not draw starting current in excess of the limits recommended by the electrical apparatus committee of the National Electric Light association. They are built in sizes rating from 7½ to 30 horsepower, 600 to 3600 revolutions per minute, low voltage, and are available with either sleeve or roller bearings. A magnetic switch with push button control is the only starting equipment required.

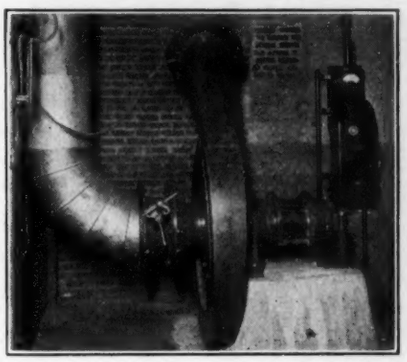
Employs Ball Bearings in Lathe Head

No. 54

Springfield Machine Tool Co., Springfield, O., has developed a ball-bearing, geared-head production lathe equipped with roller bearings on the spindle. While this machine has been rearranged for a production shop it possesses the regular headstock design employed by this company in which ball bearings are used exclusively and drop forged gears are employed. In place of the rapid change gear device, an instantaneous feed box giving six charges of feed for each setting of change gears is used. In place of a lead screw, a power rapid traverse screw is used operated entirely from the front. Roller bearings used in the lathe spindles of the Springfield company are of the Timken type.



No. 54—Geared head lathe equipped with ball and roller bearings



No. 55—Cupola blower is compact

Designs Improved Blower for Cupola Blast

No. 55

General Electric Co., Schenectady, N. Y., has designed a new cupola blowing equipment which it is said will greatly improve the efficiency of the melting operation. This equipment automatically insures the supply of a constant weight of air to the cupola, irrespective of atmospheric conditions and the resistance through the cupola. The device, which is shown in the accompanying illustration, will be manufactured with either hand or automatic control and can be set to

Iron Trade Review's Calendar of New Equipment

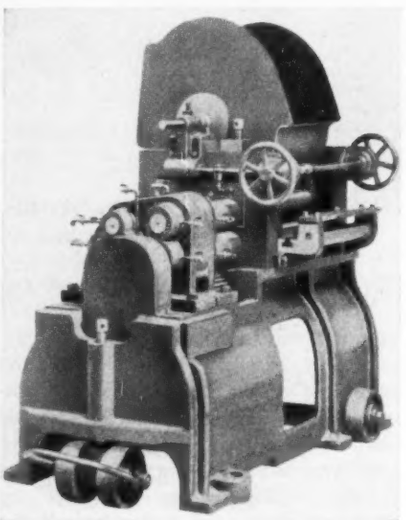
No.	Item	Builder	Comment	Date Described
44.	Open-throat shear	Mackintosh-Hemphill Co.	Improved-type, large capacity	Feb. 16
45.	Trigonometric calculator	J. S. Ronay	Simple means for calculating	Feb. 16
46.	Milling machines	Kearney & Trecker Corp.	New sizes of recent model	Feb. 16
47.	Die casting machine	Madison-Kipp Corp.	Improved-type, automatic	Feb. 16
48.	Fuel value calculator	Coal Specialties Co.	Computes fuel value of coal	Feb. 16
49.	Pipe line purifier	Blaw-Knox Co.	Removes moisture and solids	Feb. 16
50.	Straightening press	Sutton Engineering Co.	Straightens pipes, tubes, bars, shapes, etc.	Feb. 23
51.	Drum switches	General Electric Co.	For control of small cranes, hoists, machine tools, etc.	Feb. 23
52.	Sheet pack opening machine	Aetna Standard Engineering Co.	Handles packs up to 8 feet wide	Feb. 23
53.	Squirrel cage induction motors	Allis-Chalmers Mfg. Co.	Start on full line voltage	Feb. 23
54.	Geared head production lathe	Springfield Machine Tool Co.	Equipped with Timken roller bearings on spindle	Feb. 23
55.	Cupola blower	General Electric Co.	Automatically insures constant supply of air	Feb. 23
56.	Portable coiler for strip	D. A. Clark Co.	Handles cold strip up to 24 inches wide	Feb. 23

give the proper weight of oxygen to meet varying operating conditions. A meter indicates the volume of air flowing for standard conditions. Constant-speed motors are used with all sets, except when direct-current motors are required. As a result, the weight of air flowing into the cupola is not controlled by variable speed, but by opening and closing the blast gate. The equipment is compactly built, requiring small floor space with a simple foundation. The casing can be swung around to any of eight different positions, simplifying installation.

Develops Portable Coiler for Cold Strip

No. 56

D. A. Clark Co., 1981 West Ninety-sixth street, Cleveland, has developed a portable coiler for coiling cold strip steel. The machine was designed in response to a demand for a heavier pattern. As shown in the accompanying illustration the design embodies the fixed gear housing and flexible coupling connection with rolls. All rolls are driven.



No. 56—Portable coiler for cold strip steel

The machine is capable of a strong tension, when tension is required, as the bed plate is rigid and presents a wide base to resist the pull. Adjustment is universal and can be made from either side of the machine. A dash-pot crane is provided for handling heavy coils.

The machine is rated at 10 to 15 horsepower, handles strip 18 and 24 inches wide, has a full base of 40 x 60 inches and weighs 6000 pounds.

About 250 representatives of the iron and steel industry attended the tenth annual dinner of the Steel Club of Philadelphia which was served at the Manufacturers club, Philadelphia, Feb. 18. Visitors were present from Pittsburgh, New York, Cleveland and other cities. Representatives from many large steel companies attended.

Discuss Problem of Blast Furnace

QUESTIONS dealing with blast furnace and coke problems formed the basis of discussion at the mid-winter meeting of the Eastern States Blast Furnace and Coke Oven association held Feb. 17 at the William Penn hotel, Pittsburgh. All attendance records of the association were broken, registration surpassing 175 members and guests. Two sessions were held simultaneously in the morning, H. A. Berg, vice president, Arthur G. McKee & Co., Cleveland, presiding over the blast furnace meeting and H. P. Zeller, vice president, Donner Hanna Coke Corp., Buffalo, serving as chairman of the coke plant meeting. Following luncheon a joint meeting of the two groups was held with E. T. McCleary, vice president, Youngstown Sheet & Tube Co., Youngstown, O., presiding.

In discussing recent developments in gas cleaning, a new installation designed to eliminate wet flue dust from blast furnace gas going into boilers was described at length. The speaker related how entrained water is removed by preheating the gas and pointed out that the gas mains are free from sludge and that only about one-half grain of dust per cubic foot of gas finds its way into the boiler. In discussing the same subject, another speaker emphasized that the ash in pulverized coal delivered into boilers is 15 times higher than blast furnace dust delivered into the same boiler and for the generating of the same volume of steam. He cited the fact that the dry flue dust passing a preheater has the same characteristic as ash in the removal. Approximately 10 per cent of the moisture in blast furnace gas is entrained, according to the opinion of another speaker, who mentioned 66 per cent as the maximum amount of flue dust that can be collected in a dry dust catcher.

That the use of high blast temperatures is not always possible was brought out by various speakers. One blast furnace operator mentioned 1250 degrees Fahr. as the best blast temperature for his particular plant, pointing out that when the stack was run on 1400 degrees Fahr, for any length of time, furnace irregularities occurred. The concensus of opinion was that the application of high blast temperatures depends upon the preparation of ore, limestone and coke and the furnace design according to local conditions. Discussion brought out the fact that where blast temperatures of 1400 degrees or higher are maintained, the furnace burden in variably is of an open character.

One speaker advocated the sinter-

(*Concluded on Page* 537)

Editorials

Metallurgists' Eyes Seeing More — *Mergers May Right Coal Industry*
Currents of Trade Swing North — *Probe Orgy Wearies Even Senate*
New Idea Bureau Stirs Interest

Crystal Structure in Metals Visible

MEETINGS of the American Society for Steel Treating always have been notable for the high merit of their technical contributions, and in this respect the meeting at Montreal last week proved no exception. One paper attracting more than passing interest described results obtained in metallographic examination using a new method of sample preparation. Two investigators, collaborating but working separately, have been able to so eliminate the "amorphous or plane film" that it became possible to see at 200 diameters the crystal formation in individual grains of metal. The investigators were able to draw a number of preliminary conclusions, but it is interest to note that their findings check the well-known slip-interference theory of hardening of Jeffries and Archer. Metallurgists will await with eagerness further investigations into crystal structures.

Railroads have been somewhat backward in participating in the activities of the heat treating fraternity, but it was gratifying to find that two of the fourteen papers read at Montreal were directly concerned with railroad practice, while another related to the best types of steel for locomotive boiler construction. The first two papers were of an extremely practical nature and therefore developed keen interest and considerable comparison of notes. Much is to be gained by a closer contact of the railroads and industry; thus it is to be hoped future activities of the society will effect this liaison.

"Too Many Mines" May Not Be Apt

ONE merger now partially operative and another promising early consummation will center practically all of West Virginia's production of coal in two hands. Similar action is said to be contemplated in other states.

Though "too many mines and too many miners" has long been diagnosed as the chief difficulty of the bituminous coal industry, this may be said to be the first practical application of the obvious remedy. Inevitably production will be concentrated at the lower-cost properties, to the benefit of consumers. It would seem logical that correcting the condition of "too many mines" will automatically disperse the surplus labor supply.

For seven years now the bituminous coal industry has been a conspicuous contrast in the forward march of business. Saddled with a union that has invited destruction not only of itself but also of its industry, and confronted with competition of a character known to few other industries, those operators who have "hung on" merit much credit. The public has been apathetic because its requirements of fuel have been adequately met, but it does need a coal industry that is conducted on a thoroughly sound basis.

Canada "Our Best Customer"

INCREASING importance of Canada as a market for American products is reflected in trade reports to the department of commerce. The United Kingdom is traditionally the United States' best customer, but for four months in 1927 Canada occupied first place among our export markets. Exceptional gains are reported in iron and steel products, machinery, automobiles, agricultural implements and electric apparatus, notwithstanding the fact the United Kingdom enjoys a preferential tariff on some of these.

The 12-months total of American exports to the dominion was $835,878,000 compared with $738,474,000 in 1926, a gain of more than $97,000,000 and within $5,000,000 of the total of our exports in 1927 to the United Kingdom.

Imports of pig iron and steel ingots increased approximately 20 per cent in value. Hardware and tools each increased about 10 per cent; tubes, pipes and fittings showed little change from 1926, while the value of wire declined slightly. Canadian import figures reveal that for the first 11 months of 1927 its imports of machinery from the United States were valued at $33,324,037.

Such important increases in total values, in the

face of declining prices, point to still greater trade possibilities with Canada.

Power Benefits Tone Investigation

PLANS of Senator Walsh and others for a senatorial investigation of the power, gas and light companies have been thrown awry. While the senate has voted to ask the federal trade commission to conduct the investigation, the decisive defeat of the kind of investigation the senate malcontents wanted is welcomed generally. The nation will be spared such a spectacle of political campaign melodrama in senate committee rooms.

Defeat of Senator Walsh's proposal perhaps was due in part to a reaction, even in the senate, against the orgy of senatorial investigations. Many senators undoubtedly took stock, on sober second thought, of what effect such an investigation would mean a few years hence to the industrial communities they represent. Many realized that industrial development in their states has resulted largely from the cheap production of power by the companies whose credit might have been impaired had the resolution gone through in its original form. It was noticeable that southern senators finally did not support the radical plans. The recent industrial advancement in the South owes considerable to the power producers.

The investigation to be conducted by the federal trade commission, although embracing only the financing and management of water power interests and not of all power corporations, will serve no useful purpose, many are convinced. Nevertheless, so long as the issue has been raised, it will afford an opportunity for the interests directly attacked to present their side fully, which may not have been the case had a senate committee presided over it in a presidential campaign year.

Training Workers To See

SINCE the Pennsylvania railroad last November inaugurated its Bureau of New Ideas 963 suggestions, many of unquestioned merit and deemed worthy of adoption, have been received from employes in more than 100 occupations.

This great railway system is thus adopting one successful method of taking employes into its interest and of taking an interest in its employes. Large steel companies have proved the feasibility and desirability of this plan and many offer cash rewards monthly for the best suggestion received along the lines of safety work, elimination of duplicated effort, or general plant efficiency.

This all makes for increased efficiency of the individual employe, since it encourages him in accurate observation and as every plant manager knows the successful workman is the observant workman.

Before a recent gathering of about 1500 engineers in Pittsburgh, Eugene G. Grace, president of the Bethlehem Steel Co., said that accurate observation is a habit to be perfected among all workmen; that the men who see clearly and precisely make the best operatives; and that all schools, grammar, high, preparatory and college should give students training not only in correct expression of English but also in accurate visualization of things around them, because it is the person who has seen correctly who judges wisely.

Mr. Grace's company and many others have adopted various means by which employes are encouraged to form habits of close observation and already the Pennsylvania railroad has proved the practicability of its plan to gain the same end.

What Our Readers Are Thinking

Sell Results Instead of Plans

To the Editor:

REFERRING to your issue of Feb. 9, 1928, the Readers' Round Table, and articles relative to business ethics:

It is believed Robert E. Kinkead pointed out good business practice in mentioning Foo Yung Sen, of old. The buyer is primarily interested in useful result and not necessarily interested in particular plans and methods of accomplishing the result. Competing firms, or contractors, are intensely interested in details and methods by which results may be produced.

Whether a contractor is the originator of the plan used, or merely an alert and successful collector of plans originated by others, he is the one usually recognized by a buyer for certain results accomplished rather than for the plan.

Instead of disclosing plans and methods, a better practice for the benefit of all concerned would be to *show the prospective buyer useful results.* The buyer who will send one contractor's plans to another contractor for a bid wants it cheaper, but just as good, and he may be honest in his way of thinking. A buyer has a right to make his dollar go as far as possible. And that is about the only use he will have for plans, if the contractor will lay them in his hands for the asking. Probably the contractor who will divulge his working plans only "shows off" and "just like a boy" hurts himself sometimes in so doing.

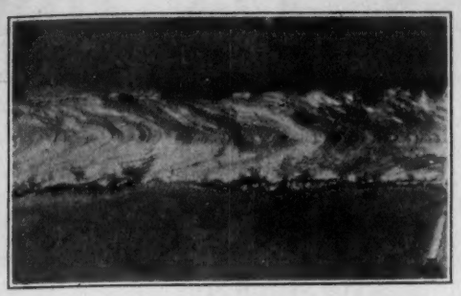
HERBERT G. IRWIN.

Amarillo, Tex., Feb. 13, 1928.

IRON TRADE REVIEW

Volume 82, Number 8 — Published Every Thursday

E. L. SHANER, Editor. — *J. D. PEASE, Advertising Director.* — *F. F. LIGHT, Circulation Manager.*



New Process May Cut Welding Cost. Page 505.

FOURTEEN technical papers were presented at the first semiannual meeting of the American Society for Steel Treating in Montreal, Feb. 16-17. The report begins on page 539. Three papers were devoted to metallurgical study and heat treating as applied to railroads. One of the most interesting features of the meeting, however, was the announcement of a new method of preparation of steel samples, whereby surface film is removed, allowing for an increase in efficiency of examination.

The Readers' Page

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IRON TRADE REVIEW is published by the Penton Publishing Co., Cleveland, O. Member, Audit Bureau of Circulation; Associated Business Papers Inc.; and National Publishers Association. Branch offices: 1147 People's Gas Bldg., Chicago; 209 Edwards Bldg., Cincinnati; 2203-2206 No. 220 Broadway, New York; 2148-49 Oliver Bldg., Pittsburgh; 24 California street, San Francisco; 1653 Pennsylvania avenue, Washington; and Boston. Foreign offices: Prince's Chambers, Birmingham, Eng.; Caxton House, Westminster S. W. 1, London; 9 Rue de Londres, Paris, France; Wilhelmstrasse 114, Berlin, S. W. 48, Germany; Cable address: *PENTON*, Cleveland; *IROTRAPEN*, London. Terms: Subscription in United States, Cuba and Mexico, $6 per year; in Canada, $8.50 per year and in Great Britain and other countries, £2:0:0 per year. *Entered at the Postoffice at Cleveland as Second Class Matter.* *Copyright 1928 by the Penton Publishing Co.*

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The Business Trend

Security Uncertainty Not Adverse For Business

By JOHN W. HILL, Financial Editor

RECENT developments in the security markets and the credit situation have been of unusual interest. Rediscount rate advances by a number of federal reserve banks have been followed by declines in the security markets. At the close of last week these declines became sharp and sweeping.

THESE events have no unfavorable significance for business. In fact they have come in the face of many genuine evidences of recovering industrial activities. Actually what has happened is that speculative activities have been absorbing an undue share of the nation's credit resources. If allowed to proceed without restraint this might have had untoward results.

THE federal reserve board was fully aware of the situation and the higher rediscount rates unquestionably were designed to curb excessive speculation. Within the space of one year loans to brokers by 49 New York banks increased by more than $1,000,000,000 to a total of nearly $4,000,000,000. Security prices, themselves, have soared to heights never before touched.

FROM a low point in 1926 of 137 the average of 25 industrial shares, computed by the *New York Times*, climbed to a peak of 246 late in 1927. The top of the great 1926 stock market boom found the average at only 191. The yield of a group of leading industrial common stocks, because of the extreme advance in values, has fallen to about 4.63 per cent.

IN ORDER to support security values at such heights, a heavy drain upon credit resources was necessary. Meanwhile business is expanding and commercial needs for credit are growing. Moreover, gold exports have been larger, and the country's great base of credit has been narrowed somewhat.

ALL THESE factors combined caused some of the federal reserve banks to revise rediscount rates upward as a warning against continuance of undue speculation. Apparently the warning has been heeded and many inflated share prices have declined. The situation is making for a more healthy condition in the stock market and in credit.

The Barometer of Business

Industrial Indicators

	Jan., 1928	One month ago	One year ago	1913
Pig iron output (Daily average, tons)	92,113	87,039	99,872	83,900
Blast furnace index 60 percent—normal	52	47.7	57	62.8
Unfilled orders (tons)	4,275,000	3,972,874	3,800,177	4,513,000
Ingot output (Daily average, tons)	152,304	121,167	146,419	.....
Dodge Bldg., awards in 27 states (sq. ft.)	63,716,000	63,200,200	44,566,000	31,250,000
Automobile output	241,000	134,000	240,000	.....
Coal output, tons	44,200,000	41,277,000	56,400,000	39,869,000
Business failures; number	2,643	2,162	2,465	1,336
Business failures; liabilities	$47,634,000	$51,062,253	$51,290,232	$22,732,000
Cement production, Bbls.	9,782,000	11,999,000	8,222,000	7,704,000
Cotton consumption bales	582,000	543,600	604,584	438,218
Car loadings (weekly average)	861,000	834,000	905,000	.....

Foreign Trade

	Jan., 1928	One month ago	One year ago	1913
Exports	$411,000,000	$409,000,000	$419,000,000	$194,000,000
Imports	$338,000,000	$331,000,000	$359,000,000	$149,900,000
Gold exports	$ 52,086,000	$ 77,849,000	$ 14,890,000	$ 5,234,000
Gold imports	$ 38,320,000	$ 10,431,000	$ 61,962,000	$ 5,900,000

Foreign Exchange

	Normal	Feb. 20, 1928	One Month ago	One Year ago
Sterling	$4.86	$4.87	$4.87	$4.86
Francs	19.3c	3.93c	3.93c	19.3c
Lira	5.26c	5.29c	5.28c	19.3c
Marks	23.8c	23.86c	23.82c	23.8c

Financial Indicators

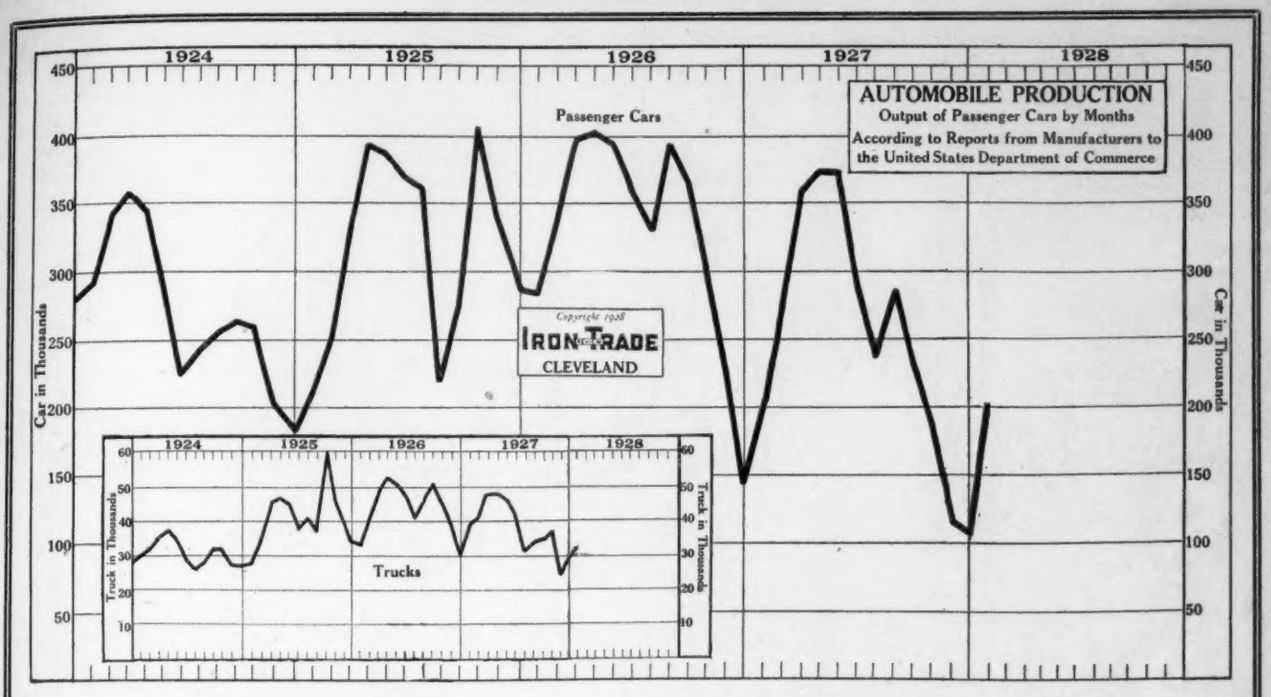
	Jan., 1928	One month ago	One year ago	1913
25 Industrial stocks	**$235.15	$241.17	$182.11	$58.19
25 Rail stocks	**$113.19	$117.82	$106.24	$82.90
40 Bonds	**$92.40	$93.15	$90.41	$93.00
Bank clearings (000 omitted)	$51,500,000	$52,584,000	$45,283,000	$13,895,000
Commercial paper rate (N. Y., per cent)	4-4¼	4-4¼	4-4½	5.60
*Commercial loans (000 omitted)	$8,617,444	$8,720,000	$8,513,000	.....
Federal reserve ratio, per cent	70	70	76	.....
Railroad earnings	†$55,000,000	†$86,000,000	$84,000,000	$59,301,000
Stock sales, N. Y. stock exchange	56,919,395	62,092,000	34,275,410	6,924,000
Bond sales, par value	$285,695,000	$272,989,000	$371,791,550	$41,499,000

*Leading member banks Federal Reserve System.
†Dec., 1927.
**Feb. 20, 1928.

Commodity Prices

	Feb. 1, 1928	One month ago	One year ago	1913
Iron Trade Review composite average of 14 iron and steel prices	$39.27	$39.09	$37.68	$26.32
Bradstreet's index	144	144.2	135	100
Economist's (British)	143	.....	144	100
Wheat, cash (bushel	$1.50	$1.42	$1.41	92c
Corn, cash (bushel)	90c	87c	76c	61c
Petroleum, crude (Bbl.)	$2.80	$2.80	$3.40	$2.50

The Business Trend

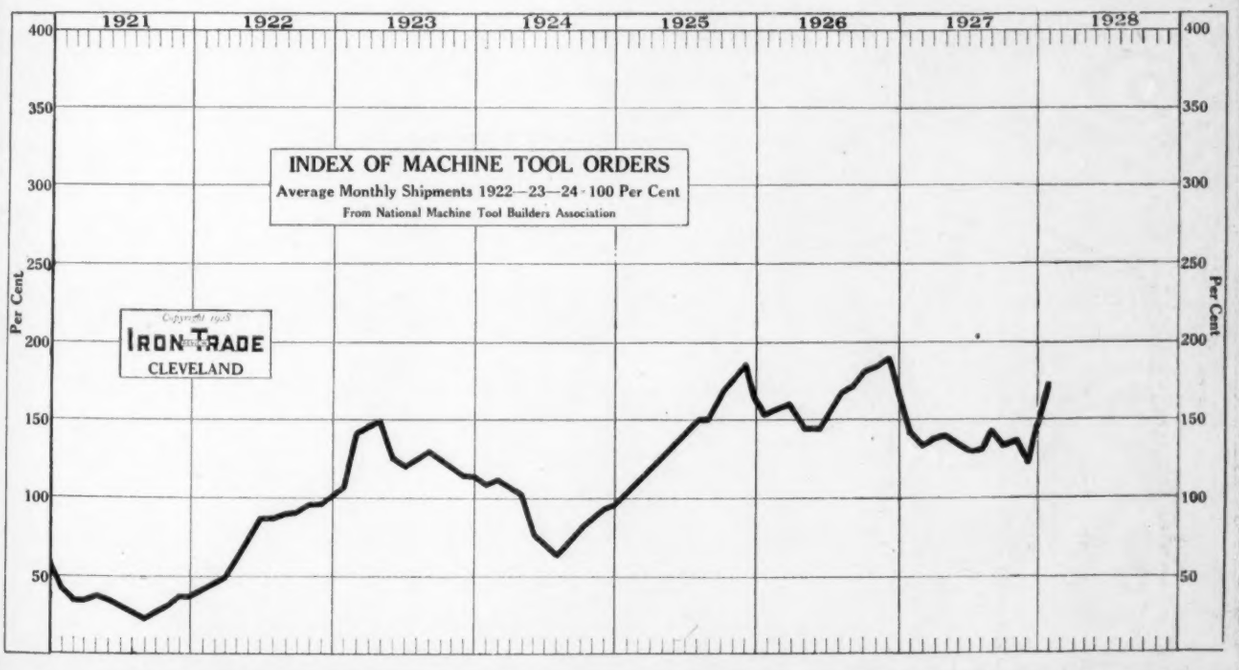


Automobile Output

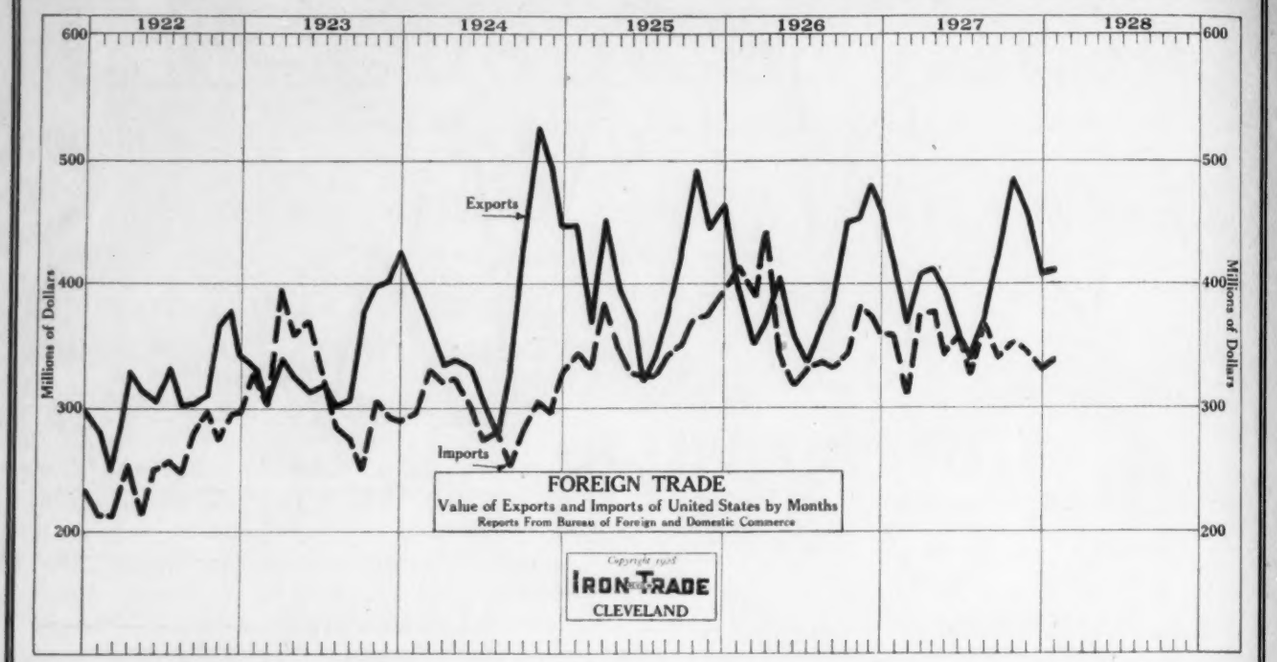
JANUARY brought important improvement in the production of automobiles. Output of the members of the National Automobile Chamber of Commerce, exclusive of Ford, for the month approximated 221,000 cars and trucks. This was an increase of 69 per cent over December and of 18 per cent over January, 1927. Ford's production in January is estimated at about 12,500 cars, but in February it was announced that production had reached 1000 cars daily at the Ford plants.

Machine Tool Orders

ORDERS for machine tools improved sharply during January. The index of net orders for the month was 217, the highest of any month since 1920. The three months' average of gross orders as shown on the accompanying chart, stood at 173.6 compared with 145.5 one month before. These indexes as computed by the National Machine Tool Builders association reflect an important contrast in the trend of machine tool orders with the downward swing of last year.



The Business Trend

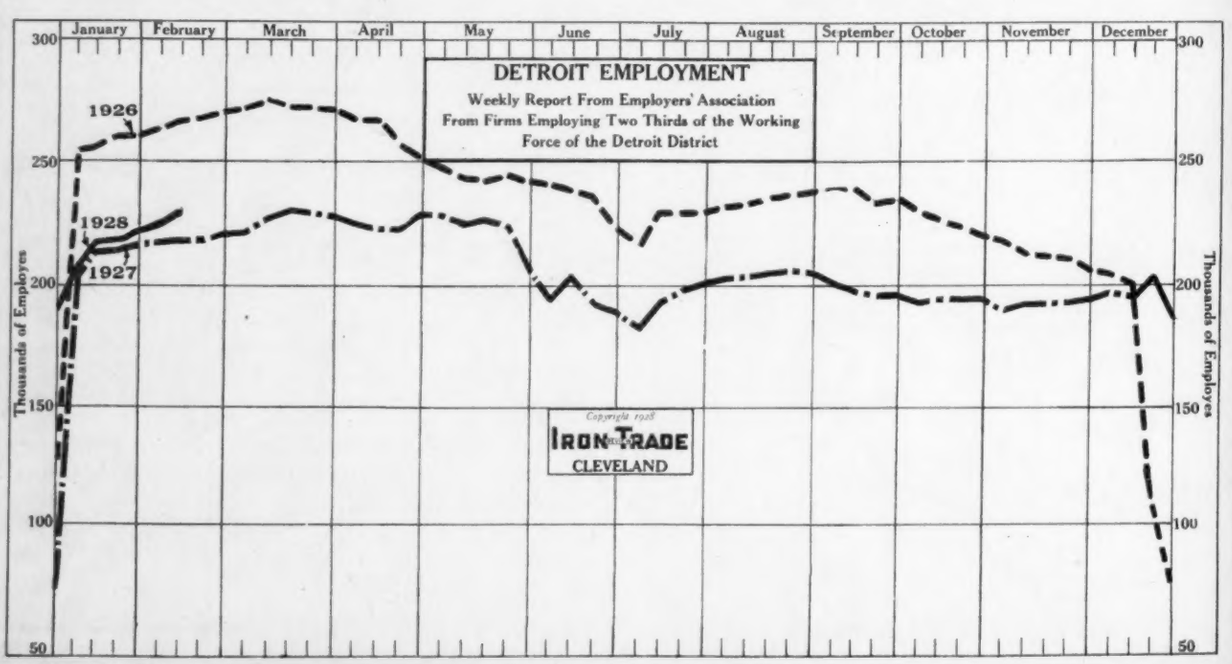


Foreign Trade

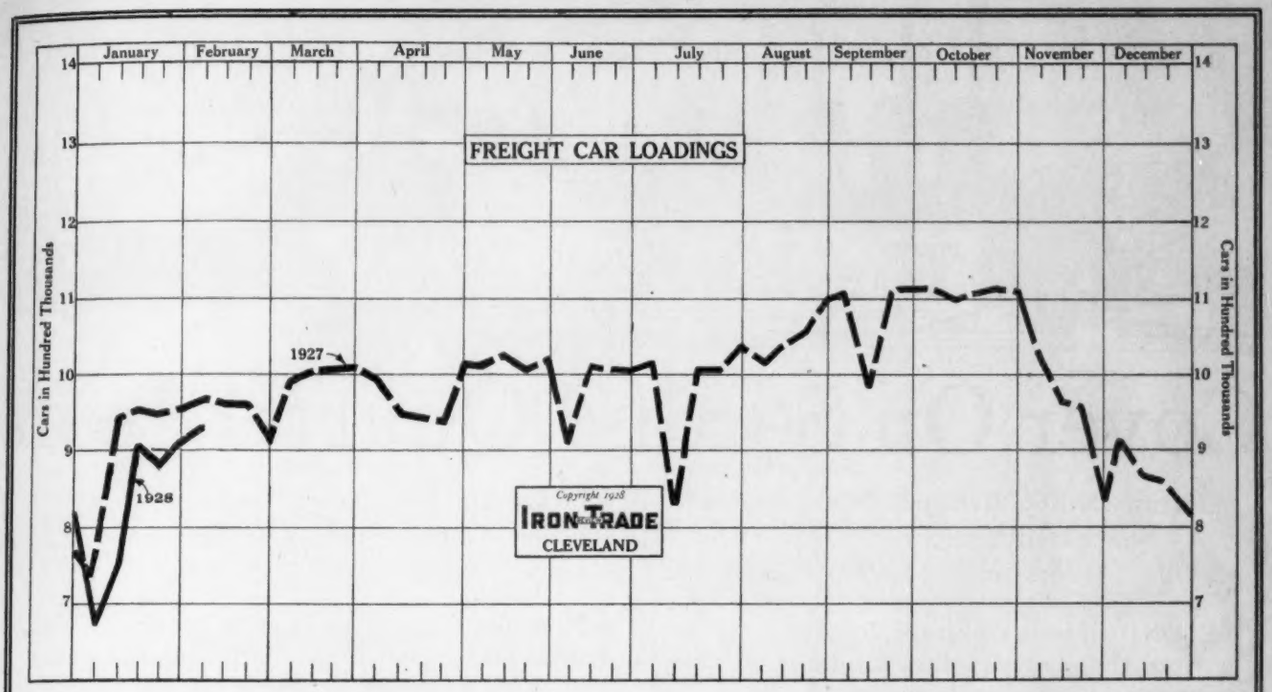
AMERICAN foreign trade showed some gain over that of December but it was lower than in the corresponding month one year ago. Exports for the month totaled $411,000,000 compared with $409,000,000 in December and $420,000,000 in January, 1927. Imports of $338,000,000 compared with $331,000,000 in December and $357,000,000 in January, 1927. The excess of exports in January amounted to $73,000,000 compared with $78,000,000 in December and $63,000,000 one year ago.

Detroit Employment

EMPLOYMENT in the Detroit district continues to show steady gains. For the week ended Feb. 14 the Detroit Employers' association reported 229,797 as the total number of factory payrolls compared with 225,292 in the preceding week. The corresponding week, one year ago, employment in the Detroit district totaled 219,338. Payrolls in the automobile center have been expanding steadily since the middle of January and they are holding well above the level of 12 months before.



The Business Trend

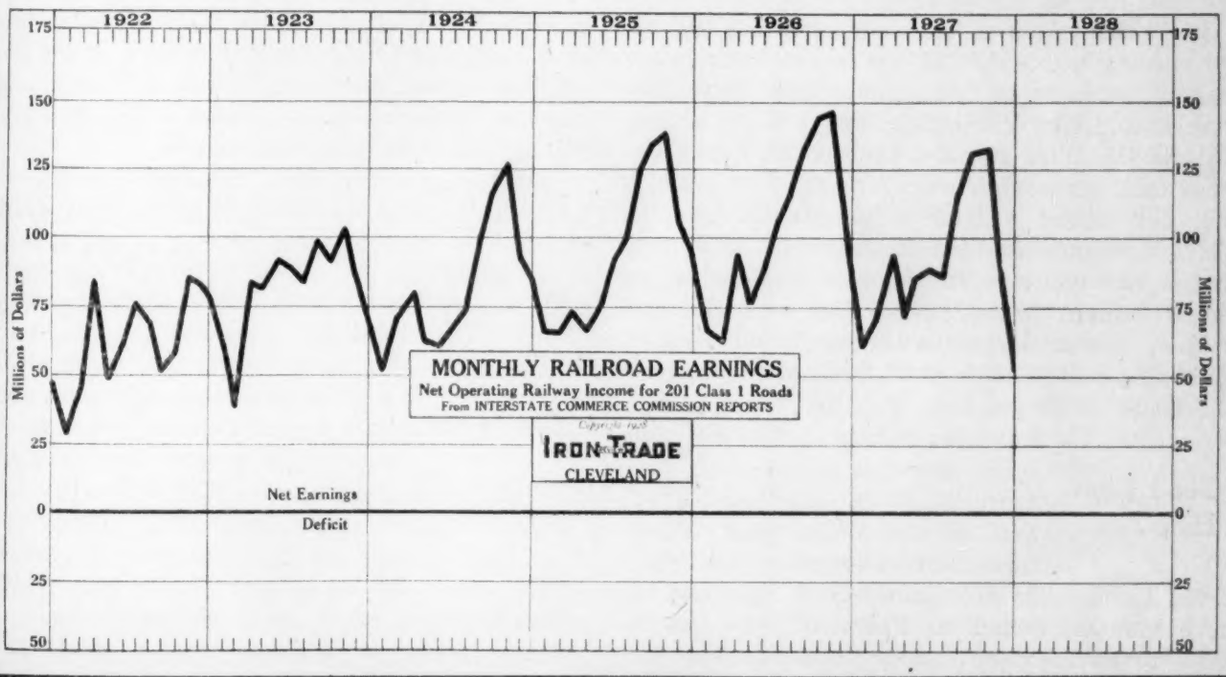


Freight Car Loadings

DURING the week ended Feb. 4 loadings of revenue freight were the largest of any week in the current year. The total was 926,204 cars, an increase of 23,372 cars over the preceding week. Compared with one year ago the total was 34,460 cars less. In the preceding week loadings were 41,000 cars less than the corresponding week one year ago and two weeks ago there was a difference of 52,000 cars compard with 12 months previously. The increase reflects greater movement of merchandise.

Railroad Earnings

CLASS I railroads in 1927 had a net operating income of $1,085,485,000. This was a return of 4.40 per cent on their property investment. It compared with a net operating income of $1,233,048,000 or 5.13 per cent in 1926. Gross operating revenues of the railroads in 1927 declined 4 per cent from the preceding year. Operating expenses increased 2.1 per cent. During December income amounted to $55,000,000 compared with $86,000,000 in December, 1927 and with $80,000,000 in December, 1926.



Cover On Second Quarter Iron

Future Selling Becomes Brisk, Especially at Chicago and Cleveland—Bars, Plates and Shapes Advanced to 1.90c, Pittsburgh, and 2.00c, Chicago—More Confident on First Half—83,000 Tons Structurals Up at Chicago—Coke Weaker

SECOND quarter coverage is lifting pig iron from the obscurity forced upon it in recent weeks by the brisk market in steel. At Chicago and Cleveland especially has interest in future iron needs broadened, while in the East considerable business hinges upon a steadier price situation. Quiet negotiations have placed upon producers' books a heavier tonnage than open inquiry would indicate.

Light steel products, especially sheets, have imbibed the moderately-upward trend which has described demand for heavy finished steel recently, and some makers have accumulated modest backlogs. Heavy shipments are going directly into consumption. Steel corporation subsidiaries continue to operate at about 90 per cent, with the entire industry approximating the 85 per cent rate of a year ago.

The price situation in steel continues strong. On opening books Feb. 22 for second quarter the leading producer of bars, plates and shapes advanced to 1.90c, Pittsburgh, and 2.00c, Chicago. This is the third upward revision in heavy finished steel since mid-November and if maintained will put second quarter shipments $2 per ton above first quarter contracts. Independent producers are expected to follow. New prices on sheets remain to be tested, but extensions to present low-price contracts are being limited. Mahoning valley markets of terne plate have advanced $4 to $6 per ton.

Good First Half Seen

Among producers of steel generally there is a growing confidence in the first half year. Fears that the exceptional improvement since late December has been based too largely upon automotive requirements have been dissipated, as February thus far appears to have topped January bookings and output slightly and automotive business is a smaller percentage of the total than in January. The rising tendency in prices also is indicative, and invoices in the next quarter are expected to reflect more of the advances imposed in the past sixty days. On account of the political situation the industry is not now looking beyond first half.

Iron Sales Mounting

More than 150,000 tons of pig iron for second quarter has been booked in the Chicago-Milwaukee district. Last week's sales of 53,000 tons at Cleveland doubled the preceding week's business. At Buffalo nearly 60,000 tons has been sold this month, for shipment the remainder of the half, with considerable inquiry from New England not yet satisfied.

Following a slight flurry in beehive furnace coke, with spot sales at $2.85, the market has weakened and as low as $2.60 has been done. Suspensions on contracts have forced some Connellsville ovens out. An excess of by-product coke has prompted some concessions in the East and injured the beehive market.

Considering all makers, February orders for both hot and cold rolled strip are exceeding January to the comparable date, and mills claims to be enforcing the recent advance. Buying of cold finished bars has shown a slight recession.

Deliveries Receding

Chicago continues the pacemaker in heavy steel, specifications the past week exceeding the comparable week of January by 20 per cent. No serious inconvenience has been caused consumers, but deliveries there range from four to six weeks. Pending structural work which should go forward shortly aggregates 83,000 tons. At Pittsburgh 25,000 tons, chiefly plates for river craft, nears placement.

Order books of Chicago district sheet mills

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	Feb. 22, 1928	Jan. 1928	Nov. 1927	Feb. 1927
PIG IRON				
Bessemer, del. Pittsburgh	$19.26	19.26	19.76	20.76
Basic, valley	17.00	17.00	17.00	17.85
Basic, eastern, del. eastern Pa.	19.50	19.50	19.50	21.00
*No. 2 foundry, del Pittsburgh	19.01	19.01	19.26	19.81
No. 2 foundry, Chicago	18.50	18.50	18.50	20.25
*Southern No. 2 Birmingham	16.00	16.00	16.50	18.00
*Southern Ohio, No. 2 Ironton	19.00	19.00	19.00	20.00
**No. 2X, Virginia furnace	20.50	20.50	21.25	22.00
**No. 2X, eastern, del. Phila.	20.76	20.51	20.51	22.26
Malleable, valley	17.25	17.25	17.50	18.10
Malleable, Chicago	18.50	18.50	18.50	20.25
Lake Superior charcoal, del. Chicago	27.04	27.04	27.04	27.04
Gray forge, val., del. Pittsburgh	18.51	18.51	18.76	19.31
Ferromanganese, del. Pittsburgh	104.79	104.79	94.79	104.79
*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.				
COKE				
Connellsville, furnace, ovens	2.60	2.70	2.80	3.35
Connellsville, foundry, ovens	3.75	3.75	3.75	3.85
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	34.00	34.00	34.00	36.00
Sheet bars, open-hearth, Pittsburgh	34.00	34.00	34.00	35.00
Billets, open-hearth, Pittsburgh	33.00	33.00	33.00	34.00
Wire rods, Pittsburgh	44.00	41.50	41.00	43.50
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.85	1.80	1.75	1.90
Steel bars, Chicago	1.95	1.90	1.85	2.00
Steel bars, Philadelphia	2.17	2.12	2.07	2.22
Iron bars, Philadelphia	2.12	2.12	2.07	2.22
Iron bars, Chicago	1.95	1.90	1.85	2.00
Shapes, Pittsburgh	1.85	1.80	1.75	1.90
Shapes, Philadelphia	2.07	2.08	2.07	2.12
Shapes, Chicago	1.95	1.90	1.85	2.00
Tank plates, Pittsburgh	1.85	1.80	1.75	1.85
Tank plates, Philadelphia	2.10	2.05	2.07	2.22
Tank plates, Chicago	1.95	1.90	1.85	2.00
Sheets, black, No. 24, Pittsburgh	2.90	2.80	2.80	2.90
Sheets, blue anl., No. 10, Pittsburgh	2.10	2.10	2.10	2.20
Sheets, gal., No. 24, Pittsburgh	3.65	3.65	3.70	3.70
Sheets, black, No. 24, Chicago	3.05	3.05	3.00	3.00
Sheets, blue anl., No. 10, Chicago	2.25	2.25	2.30	2.35
Sheets, galvanized, No. 24, Chicago	3.90	3.90	3.85	3.85
Plain wire, Pittsburgh	2.50	2.40	2.40	2.45
Wire nails, Pittsburgh	2.65	2.50	2.50	2.60
Tin plate, per base box, Pittsburgh	5.25	5.25	5.30	5.50
OLD MATERIAL				
Heavy melting steel, Pittsburgh	15.00	15.35	14.20	16.10
Heavy melting steel, eastern Pa.	14.00	14.00	14.00	15.00
Heavy melting steel, Chicago	12.50	12.25	11.50	13.10
No. 1 wrought, eastern Pa.	15.25	15.25	15.75	17.00
No. 1 wrought, Chicago	12.35	12.65	11.25	13.95
Rails for rolling, Chicago	15.00	15.00	13.95	16.00

Composite Market Average

The Fourteen Leading Iron and Steel Products Included Are Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (February 22, 1928)	**$35.61**
Last week (February 15, 1928)	**35.61**
One month ago (January, 1928)	**35.27**
Three months ago (November, 1927)	**35.35**
One year ago (February, 1927)	**36.97**
Ten Years ago, (February, 1918)	**56.67**
Fifteen years ago (February, 1913)	**28.05**

show substantial gains and some tonnage orders have tested the levels of 3.05c, delivered Chicago, for black, 3.90c for galvanized and 2.25c to 2.35c for blue annealed. February bookings of sheets exceeded those for January in the New York district, but prices are unsteady. All classes of sheet users are heavier buyers at Pittsburgh, with mills restricting extensions to existing contracts to 10 per cent. Sheet production is higher this week in the Mahoning valley.

Pending establishment of some recent advances, the IRON TRADE REVIEW composite of fourteen leading iron and steel products is unchanged this week at $35.61.

Late News Flashes

Auto Production Up in January

Washington, Feb. 21.—Automobile production in the United States in January was the highest it has been since September, 1927 totaling 225,039 passenger cars and trucks, according to the department of commerce. Canadian production totaled 8463 in January.

Chicago Steel Tops Last Year's Rate

Chicago, Feb. 21.—Steelworks operations in the Chicago district continue at about 93 per cent, considerably above a year ago. Twenty-nine of the 36 steelworks furnaces in the district are active. Bar and shape mill operations approximate 90 per cent. Plate mills are 85 to 90 per cent engaged. Rail mill schedules are above 90 per cent.

More Valley Open Hearths On

Youngstown, O., Feb. 21.—The largest number of independent open hearths to be fired in many months here is active this week, 40 out of 53. Steel bar mills are 60 per cent active among independents and 70 per cent with Carnegie Steel Co. Out of 127 independent sheet units, 108 are active against 111 last week, but the mills this week are working more hours and turning out more tonnage.

Pittsburgh Steel Rate Still 80

Pittsburgh, Feb. 21.—Steelmaking largely is unchanged from a week ago, averaging about 80 per cent. Carnegie Steel Co. is between 80 and 85 per cent, Jones & Laughlin Steel Corp. about 80 per cent, Pittsburgh Steel Co. 82½ per cent, and Pittsburgh Crucible Steel Co. 67 per cent, with a chance of increasing this week. Weirton Steel Co. has 10 out of 11 open hearth furnaces on including the large capacity No. 11 furnace at Weirton. The Butler interest keeps six out of 10 open hearths active.

Carnegie Steel Co. on Feb. 15 blew in its No. 4 stack at New Castle, giving it two out of four active there.

Current Rolled Steel Prices

PRICES, CENTS PER POUND, UNLESS OTHERWISE STATED

Semifinished Material

Prices per gross ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$33.00
Pittsburgh, bessemer	33.00
Youngstown	33.00
Cleveland	33.00
Philadelphia	33.30 to 39.30
Chicago	33.00
Forging, Pittsburgh	39.00
Forging, Philadelphia	43.30

SHEET BARS

Pittsburgh, Youngstown	$34.00
Cleveland	33.00

SLABS

Pitts., Young., and Cleve.	$33.00

WIRE RODS

Pittsburgh, Cleveland	$44.00
Chicago	45.00

SKELP

All grades, Pittsburgh	1.85c

Standard Structural Shapes

Pittsburgh	1.85c
Philadelphia, del.	2.07c to 2.18c
New York, del.	2.14c
Chicago	1.95c
Cleveland, del.	2.04c
Buffalo	1.95c
Bethlehem	2.00c
Birmingham	2.00c
Pacific coast, c.i.f.	2.35c

Steel Plates

Pittsburgh	1.85c
Philadelphia, del.	2.10c
New York, del.	2.175c
Chicago	1.95c
Cleveland	2.04c
Buffalo	1.95c
Coatesville, Sparrows Point	2.00c
Birmingham	2.00c
Pacific coast, c.i.f.	2.25c to 2.30c

Iron and Steel Bars

Pittsburgh, soft steel	1.85c
Pittsburgh, cold finishing	2.00c
Pittsburgh, forging quality	2.10c
Philadelphia, soft steel	2.17c
New York, soft steel	2.19c
Chicago, soft steel	1.95c
Cleveland, soft steel, mill	1.85c
Cleveland, soft steel, del.	1.87½ and 2.04c
Birmingham, soft steel	2.00c
Buffalo	1.95c
San Francisco, soft steel	2.35c
Pittsburgh, refined iron	2.75c to 4.25c
Chicago, reinforcing billets	2.20c to 2.75c
Chicago, reinforc. rail steel	1.85c to 1.95c
Youngstown, reinf. billet, base	1.90c to 2.00c
Chicago, rail steel	1.80c to 1.85c
Rail steel, mill	1.65c to 1.75c
Philadelphia, common iron	2.07c to 2.22c
New York, common iron	2.09c to 2.24c
Chicago, common iron	1.95c

Hoops, Bands, Strips

Hot strip, under 3-inch, Pitts	2.20c to 2.40c
Hot strip, 3 to 6-inch, Pitts	2.10c to 2.20c
Hot strip, 6 to 12-inch, Pitts	1.90c to 2.00c
Hot rolled strip, 12 to 24-inch, 16 gage and heavier, coils or cut lengths, 1.85c plate basis, or 2.10c blue annealed basis, plate or sheet extras.	
Hot rolled strip steel, under 3-inch, Chicago	2.30c to 2.50c
Hot rolled strip, 3 to 6-inch, Chicago	2.20c to 2.30c
Hot rolled strip, 6 to 12-inch, Chicago	2.00c to 2.10c
Hot rolled strip, 12-inch to 24-inch, Chicago	1.95c plate base
Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier base, Pittsburgh, Cleveland (less than 3 tons)	3.15c
Worcester, Mass.	3.40c

Cold Finished Steel

Cold finished steel bars, drawn or rolled, Pitts., Chi., c.l.	2.30c
Shafting (turned, polished) Pitts.	2.30c
Shafting (turned, ground) mill (Depending on size, 1⅞ to 7-inch)	2.45c to 2.90c
Cold finished steel bars, Cleve.	2.30c

Chain, Piling, Cut Nails

Cut nails, c.l., f.o.b. mills	2.80c
Chain, 1-in. proof coil, Pitts.	6.00c
Sheet piling base, Pittsburgh	2.25c to 2.35c

Alloy Steel

Hot Rolled

F.o.b. Pittsburgh or Chicago

To Tonnage Users in Auto. Industry

S.A.E. Series Number	100 lbs. Bars
2100 (*⅓ per cent Ni. 0.10 to 0.20 per cent C)	$ 2.90 to 3.00
2300 (3½ per cent nickel)	4.00 to 4.10
2500 (5 per cent nickel)	4.90 to 5.10
3100 (Nickel chromium)	3.00 to 3.10
3200 (Nickel chromium)	4.50 to 4.75
4100 (Chromium molybdenum)	3.00 to 3.10
4100 (Cr. Mo. 0.25-0.40)	3.90 to 4.05
4615 (Ni. 1.50%; Mo. 0.10-0.20)	4.05 to 5.20
5100 (Chromium steel)	3.00 to 3.10
6100 (Cr. V., forging)	4.00 to 4.10
6100 (Cr. V., spring)	3.50 to 3.75
9200 (Silico Mang., spring steel)	3.00 to 3.20
Ni. Cr. V. (Ni. 1½%, Cr. 1%, V. 0.15%)	4.00 to 4.10

*Mill number not formally accepted by S. A. E.

Hot rolled alloy billets 4 x 4-inch and over take the same prices per gross tons as same specification of alloy bars per net ton. Sizes from 4 x 4-inch down to 2½ x 2½-inch take same basis plus $5 a ton extra. Billets smaller than 2½ x 2½-inch take bar price on net ton basis.

Cold Rolled

Cold rolled alloy steels take 1.00c a pound extra over hot rolled when mean carbon is 0.30 or under. When the carbon is above 0.30 the extra for cold rolled is 1.75c, including annealing.

Sheets

SHEET MILL BLACK

No. 24, Pittsburgh base	2.90c
No. 24, Philadelphia, delivered	3.22c
No. 24, Gary, Indiana Harbor	3.00c
No. 24, Chicago, delivered	3.05c
No. 24, Birmingham, base	3.05c

TIN MILL, BLACK

No. 28, Pittsburgh	2.90c to 3.00c
No. 28, Gary, base	3.00c to 3.10c

GALVANIZED

No. 24, Pittsburgh base	3.65c to 3.75c
No. 24, Philadelphia, delivered	4.07c
No. 24, Gary, Indiana Harbor	3.85c
No. 24, Chicago, delivered	3.90c
No. 24, Birmingham, base	3.90c

BLUE ANNEALED

No. 10, Pittsburgh, base*	2.10c
No. 10, Philadelphia, delivered	2.42c
No. 10, Gary, Indiana Harbor	2.20c to 2.30c
No. 10, Chicago, delivered	2.25c to 2.35c
No. 10, Birmingham base	2.30c

*Plus 10 cents for 40 inches or wider.

AUTOMOBILE

No. 20, Pittsburgh base	4.00c to 4.15c

IRON

No. 10, Pitts., blue ann., c.l.,	2.80c
No. 24, Pitts., box annealed, 1-pass cold rolled, carload	3.75c
No. 24, Pitts., gal., c.l.	4.85c

Tin and Terne Plate

Prices per 100-pound box, Pittsburgh

*Tin plate, coke base	$5.25

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24	4.10c

*Prices subject to quantity differentials.

Wire Products

To Jobbers in Carloads

Dealers 5 cents per 100 pounds extra f.o.b. Cleveland and Pittsburgh base.

Bright plain wire, No. 9 gage	2.50c
Annealed fence wire	2.65c
Galvanized wire, No. 9 gage	3.10c
Barbed wire, painted	3.10c
Barber wire, galvanized	3.35c
	Per 100 lbs.
Wire nails	$2.65
Galvanized nails	4.65
Polished staples	3.10
Galvanized staples	3.35
Coated nails, 100 lb. kegs, subject to Sept. 1, 1926, extra, base	2.65
Woven wire fencing (retailers) 12½ gage, 26-in. high 7-in. bars and 12-in. stays, per 100 rods, f.o.b. Pitts.	$20.03

Joliet, DeKalb and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Cleveland-Pittsburgh base on products made there; Duluth $2 higher, Worcester, Mass., and Fairfield, Ala., $3 higher.

Rails, Track Material

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	43.00
Relaying rails, St. Louis	24.00 to 31.00
Relay, rails, Pitts. 60 to 90 lb.	27.00 to 30.00
Light rails, 25 to 45, mills	36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, Pittsburgh	2.75c to 2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.10c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., stand.	70 off list
Track bolts, Chicago	3.80c
Tie plates, Chicago, Pitts.	2.25c

Iron and Steel Pipe

Base Discounts Pittsburgh and Lorain, O., to Jobbers in Carloads

	Black	Galv.
1 to 3-inch butt steel*	62	50½
1 to 1½-inch butt iron	30	13

Indiana Harbor, Ind., and Evanston, Ill., 2 points less, Chicago del., 2½ points less.

*To large jobbers these discounts are increased on black by 1 point and a supplementary discount of 5 and 5 per cent; on galvanized by 1½ points with a supplementary 5 per cent.

Boiler Tubes

Carload Discounts—Less-carloads 4 points Lower—F.o.b. Pittsburgh Mills

Steel 3¼ to 3¾-inch	42½
Charcoal iron, 3¼ to 4½-inch	9
Seamless hot rolled 3¼ to 3½-inch	46

Further discounts of five to seven 5 per cent for carloads on lap welded steel. On seamless hot rolled several more 5 per cents, and on charcoal from one 10 per cent to two 10 and one 5 per cents.

Cast Iron Water Pipe

Prices per net ton

Class B Pipe

Six-inch and over, Birming'm	$28.00 to 30.00
Four-inch, Birmingham	32.00 to 34.00
Four-inch, Chicago	40.20 to 42.20
Six-inch to 24-inch, Chicago	36.20 to 38.20
Four-inch, New York	40.25 to 41.60
Six-inch and over, New York	36.75 to 37.75
Standard fittings, Bir. base	$100.00

6 to 24-inch, base; over 24-inch, plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

Bolts and Nuts

F.o.b. basing points, Pittsburgh, Cleveland, Birmingham and Chicago.

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lots, apply to lists of April 1, 1927.

Small lots are 55 to 60 per cent off.

CARRIAGE BOLTS

All sizes, cut thread	70 off

Rolled thread ⅝x6 and smaller take 10 per cent lower list.

Eagle list	70 off

MACHINE BOLTS

All sizes, cut thread	70 off

Rolled thread ⅝x6 and smaller take 10 per cent lower list.

Lag screws	70 off
Plow bolts, Nos. 1-2-3-7 heads	70 off
Tap bolts	70 off
Blank bolts	70 off
Stud bolts without nuts	70 off
Stove bolts, 80-10-5 off in packages; 80-10-5 with 2½ off in bulk.	
Tire bolts	60-5 off

NUTS

Semifinished	70 off

HEXAGON CAP SCREWS

Milled	80-10-10 off
Upset 1-in. diam. and smaller	85-5 off

SQUARE HEAD SET SCREWS

Milled	80-10 off
Upset, 1-in. diam. and smaller	80-10-10 off

Rivets

Struct., c.l., Pitts.-Cleve.	2.75c
Structural rivets, c.l., Chicago	2.85c
**Rivets, 7/16-inch and smaller, Pittsburgh, Cleveland and Chicago	70 and 10 to 70 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Washers

Wrought, c.l., Pitts. dist.	$6.75 off
Wrought, c.l., Chicago dist.	$6.70 to 6.90 off
Lock washers (dealers)	85-5 off
Lock washers (consumers)	85 off

Pig Iron

Large Sales Made for Second Quarter—Chicago District Shipments Best in 14 Months—Prices Are Stronger

GOOD sales of pig iron for second quarter feature the market. Chicago furnaces have booked about 150,000 tons for that period. Buffalo furnaces in the past week took 50,000 to 60,000 tons, and furnace interests at Cleveland reported booking 53,000 tons, mainly for second quarter. Sales at St. Louis by the local producer totaled 11,000 tons. New York reports bookings amounting to over 8000 tons. Two large tonnages of basic iron are understood to have been placed by New England consumers. Shipments from Chicago district producers in the past week were the best in 14 months. Lake furnace prices are stronger, following heavy orders and shipments in recent week. One lake furnace has advanced its price 50 cents.

PITTSBURGH, Feb. 21.—The pig iron market still is devoid of interest. Westinghouse Electric & Mfg. Co. is showing no hurry to close on its inquiry for Trafford City, Pa., as noted last week. The plant's requirements for second quarter are expected to be larger than that for the present period, and the purchase may reach appreciable proportions. While two quotations have been submitted at $17.50, base, valley, other makers still are willing to sell at $17.25. Other inquiries are small, as are current sales. Releases on contracts are numerous and consumers generally are anxious for deliveries. This is reducing stockpiles. In one or two instances daily shipments are equal only to daily output. One middle interest has issued an inquiry for 2000 tons of foundry iron, possibly of speculative character. Bessemer activity is confined to single carloads at $17.50, valley. Nothing new is noted in basic. Valley producers are maintaining $17, valley, as a nominal quotation.

Boston, Feb. 21.—Two large users of basic iron in New England are reported to have closed for tonnage, mainly with a Bridgeport, Conn. company. Sales of foundry iron in the past week declined from the previous week, reaching a total of 3000 tons. Buffalo No. 2 plain still is available at $16 50, although all but one furnace interest in that territory are on a $17 base. No. 1X Buffalo is being quoted by all furnaces at $18 50. Furnaces east of Buffalo report stricter adherence to differentials.

New York, Feb. 21.—Sales of pig iron the past week aggregated well over 8000 tons. Burnham Boiler Corp. bought about 1000 tons of foundry for its plants at Elizabeth, N. J., and Lancaster, Pa. Abendroth Bros., Port Chester, N. Y., want 2000 tons for April-May shipment, half involving No. 2 plain and half No. 2X. American Radiator Co. has not yet taken action against its recent inquiry for 2000 tons of foundry for Gloucester City, N. J. A. P. Smith Mfg. Co., East Orange, N. J., seeks 650 tons of foundry iron. A Connecticut melter wants 1000 tons. It is understood neither Central Foundry Co. nor Essex Foundry has taken action on tonnage for which they recently were in the market. Prices continue to reflect some unsteadiness. Buffalo iron for this district is $17, base, furnace, although lower can be done. Eastern New York state iron generally is $18, base, furnace, although less has been named. Eastern Pennsylvania foundry iron has sold in this district at $20, base, furnace, although $19.50 has not yet disappeared.

Buffalo, Feb. 21.—Buffalo furnaces have sold 50,000 to 60,000 tons of pig iron to date this month, most of it for first half shipment. Inquiry has been reduced to small proportions by general covering, particularly in New York state. Considerable New England inquiry for first half remains to be covered. For the Buffalo district, the price is firm at $17, base. for the foundry grade, and $17.50 for malleable. Outside, prices range from $16.50 to $17, base, for foundry grades.

Cleveland, Feb. 21.—Sales of pig iron booked by furnace interests at Cleveland during the past week totaled 53,000 tons, nearly twice the tonnage taken in the week preceding. A considerable portion of this represents business in eastern territory, which has shown more activity. One lot of 500 tons was closed by one merchant interest; another took 3000 tons. Most of the tonnage is for second quarter. The daily average rate of shipments exceeds that of the comparable period in January. A feature of the market is that open inquiries have not been as heavy as sales. Inquiries now pending before some makers do not exceed 5000 tons. Negotiations have been conducted quietly. A local furnace interest figured to a considerable extent in recent distribution of orders by American Radiator Co., amounting to 30,000 tons for various plants. The market is stronger, and one lake furnace interest has advanced 50 cents to $17.50, base, furnace. Cleveland furnaces are trying to get $17, base, in outlying territory, but allowances still are made for freight disadvantages in competitive territory. For delivery in Michigan the price is $18, base, furnace. Cleveland furnaces have taken additional lots for local delivery at $18, base, furnace.

Birmingham, Ala., Feb. 21.—Pig iron purchases are small. Prices are firm at $16, base, Birmingham. Furnace yard stocks are larger than at any time in the past year.

Cincinnati, Feb. 21.—Purchase of 600 tons of foundry iron by Favorite Stove & Range Co., Piqua, O., and 1000 tons of malleable by another consumer in this territory, were the largest pig iron transactions this week. Southern Ohio iron rules firm at $19, base, Ironton, even though that figure is almost prohibitive compared with quotations made by Lake Erie and southern furnaces which are

(*Concluded on Page* 537)

Pig Iron Prices

Per gross ton

Bessemer, valley furnace	$17.50
Bessemer, del. Pittsburgh	19.26
Basic, valley furnace	17.00
Basic, del., Pittsburgh	18.13 to 18.76
Basic, Buffalo furnace	16.50 to 17.00
Basic, del., eastern Pa.	19.25 to 20.25
Malleable, valley furnace	17.25
Malleable, del. Pittsburgh	19.01
Malleable, del. Cleveland	18.50
Malleable, Chicago furnace	18.50
Malleable, Buffalo furnace	17.50
Malleable, del. eastern Pa.	20.00 to 21.00
No. 1 foundry, Chicago furnace	19.00
No. 1X, eastern del., Phila.	21.26 to 21.76
No. 1X, Buffalo furnace	18.00 to 18.50
No. 2 foundry, valley furnace	17.25
No. 2 foundry, del., Pittsburgh	19.01
No.2 fdy., Everett, Mass., fur	19.00 to 21.00
No. 2 foundry, Buffalo furnace	17.00
No. 2 foundry, Chicago furnace	18.50
No. 2 foundry, Granite City	19.50
No. 2 foundry, Ironton furnace	19.00
No. 2 foundry, del. Cleveland	18.50
No. 2 foundry, del. Phila.	20.26 to 20.76
No. 2 Virginia furnace	20.00 to 20.50
No. 2 foundry, N. J., tidewater	19.78 to 21.76
No. 2 foundry, east N. Y. fur.	18.00
No. 2 Alabama, Birmingham	16.00
No. 2 Alabama, del. Cincinnati	19.69
No. 2 Tenn., Birmingham base	16.00
No. 2 Tenn., del., Cincinnati	19.69
No. 2 Alabama, del. Philadelphia	22.01
No. 2 Alabama, del. Chicago	22.01
No. 2 Ala., del. Chicago, river-rail	20.18
No. 2 Ala., del. Boston, rail-water	22.91 to 24.77
No. 2 Alabama, del. Cleveland	22.01
No. 2 Alabama, del. St. Louis	20.42
No. 2X, east. N. J., tidewater	20.28 to 21.26
No. 2X, eastern, del. Phila.	20.76 to 21.26
No. 2X, foundry, Buffalo furnace	17.50
No. 2X, eastern, del. Boston	23.15 to 23.65
No. 2X, Virginia furnace	20.50 to 21.00
No. 2X, Virginia, del. Phila.	25.04 to 25.54
No. 2X, Virginia, del. Jersey City	25.37 to 25.87
No. 2X, Virginia, del. Boston	25.71 to 26.21
Gray forge, val., del., Pittsburgh	18.51
Low phos., standard, valley	27.00
Low phos., standard, Phila	24.76 to 27.79
Low phos., copper bearing fur.	23.00 to 23.50
Charcoal, Birmingham	28.00
Charcoal, Superior, del. Chicago	27.04

Silvery iron, Jackson county (Ohio) furnace, in per cents: 5—$22; 6—$23; 7—$24; 8—$25; 9—$26; 10—$28; 11—$30; 12—$32; 13—$34.

Bessemer ferrosilicon, Jackson county (Ohio) furnace, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$40.50; 16—$43.

Coke

Beehive Furnace Fuel Prices Again Drop—Spot Minimum $2.60—By-Product Coke Shaded

BEEHIVE furnace coke prices have eased off 10 cents or more to a minimum of $2.60, owing to diminished demand and competition from by-product fuel. By-product coke prices also have been shaded in some districts. Weather conditions have had an adverse effect on the market. Connellsville interests, however, note an increase in specifications for foundry coke.

Pittsburgh, Feb. 21.—Prices of beehive furnace coke again are slipping after being benefited temporarily by extra purchases for one furnace interest. Spot prices advanced on that movement as high as $2.85, and while a few blocks of several carloads each brought $2.75 late last week other sales have been made since at $2.60 to $2.70. The coke producer who last Tuesday received a suspension notice from the Stewart Furnace Co., which put its furnace out of blast last Saturday, has discontinued production as no other outlet has appeared. Some excess coke has been sold in the spot market at various figures. Large supplies of by-product coke are available in a number of districts making it difficult for the market to absorb all of the beehive coke available. Heating coke is selling at $2.50 and higher. Foundry coke specifications are increasing, as sanitary ware manufacturers and other users expand operations. Spot sales are meager, users generally being covered. Prices range from $3.75 to $4.50 for ordinary grades, with premium brands in open top cars still selling at $5.10.

Production of coke in the Connellsville region in the week ended Feb. 11 was 53,700 tons, compared with 49,620 tons in the preceding week, according to the *Connellsville Courier*.

Boston, Feb. 21.—Coke prices are firm. Some foundries are increasing operations moderately. Shipments continue poor.

New York, Feb. 21.—Demand for foundry coke for shipment on contracts has improved further. Spot demand is small. The easy tendency in prices appears to have spread to by-product foundry coke, and instances of shading are reported in this district and New England. The usual price in northern New Jersey is $8.30, ovens, equivalent to $9 to $9.40 delivered at Newark. In New England by-product foundry coke continues $11.50, delivered at representative consuming points. Spot beehive foundry coke to consumers ranges from $3.75 to $4.25, Connellsville, for ordinary brands.

Cincinnati, Feb. 21.—Specifications for by-product foundry coke in February have been the best in many months, the improvement having been caused by a material increase in automobile production and by better operation of jobbing foundries. Demand for New River and Wise county beehive coke has been light. The Portsmouth By-Product Coke Co. at Portsmouth, O., has announced it will double its production of foundry coke March 1, this arrangement to be continued on a permanent basis.

St. Louis, Feb. 21.—Demand for metallurgical coke continues satisfactory, and shipments are slightly above the recent average. Some foundries have increased operations. Western and southwestern melters are inquiring for coke, mainly for February and March. Prices are steady.

Birmingham, Ala., Feb. 21.—Specifications for foundry coke are fairly active. Practically all by-product ovens here are in operation. Prices are steady.

Coke Prices

Beehive Ovens

Prices per Net Ton

Connellsville furnace	$2.60 to 2.75
Connellsville foundry	3.75 to 4.25
New River foundry	7.00 to 8.00
New River furnace	6.00
Wise county foundry	5.00
Wise county furnace	4.50
Alabama foundry	5.00

By-Product Foundry

Newark, N. J., del.	9.00 to 9.40
Chicago, ovens	9.00
New England, del.	11.50
St. Louis	9.75
Birmingham	5.00
Indianapolis, del.	9.75
Ashland, Ky.	7.50
Portsmouth, O.	7.50
Detroit, ovens	9.00
Buffalo, ovens	9.00

Ferroalloys

Specifications Increasing—Market Is Firm

Pittsburgh, Feb. 21.—Ferroalloy specifications are increasing. Shipments of ferromanganese this month will exceed January's. All invoices are at $100, seaboard basis. No sales of 50 per cent ferrosilicon are noted at $88.50, almost all users being covered at $83.50. Specifications are fair. This condition also appliles to ferrotungsten and ferrophosphorus. The spiegeleisen situation is brightening, with some buyers taking more than their monthly quotas. From $30 to $33 is the price range. Some single carload inquiries recently developed the maximum figure.

Chicago, Feb. 21.—New buying of ferroalloys is quiet. Releases on orders are good and shipments are at the usual rate for this time of the year. Contracting for ferromanganese has been extremely quiet. The price is $100, seaboard, although rumors of a possible advance of $5 in the contract price are heard. Carload lots of spiegeleisen command $32, eastern furnace, for 19 to 21 per cent. Stocks have been reduced at the Wells, Mich., furnace. Buying of spiegeleisen is light.

Advertising Medal Given to James H. McGraw

At a dinner held at the Faculty club, Boston, Feb. 17, the Harvard Advertising Award gold medal for distinguished individual service to advertising was awarded to James H. McGraw, president of the McGraw-Hill Publishing Co., New York. The medal is one of ten awards established by Edward Bok and is the greatest honor of the ten. The award is considered to be a special recognition not only to Mr. McGraw, but to the business press. The medal was presented by Prof. A. M. W. Sprague, acting dean of the graduate school of business administration of Harvard university.

1927 Freight Traffic Off

Class one railroads in 1927 handled 474,682,943,000 net ton miles of freight, a decrease of 2.9 per cent from 1926 but an increase of 4.1 per cent over 1925, states the bureau of railway economics, Washington. Daily average freight car movement in 1927 was 30.4 miles per day, identical with 1926 but an increase of 1.9 miles over 1925. The average load per freight car in 1927, including both less-carload and carload shipments, was 27.2 tons, against 27.4 tons in 1926 and 27 tons in 1925 and 1924.

March orders of the Midland Steel Products Co., Cleveland and Detroit, call for 56,000 automobile frames, a month's record.

Ferroalloy Prices

Ferromanganese, 78 to 82 per cent, tidewater, duty paid	$100.00
Ferromanganese, del. Pittsburgh	$104.79
Spiegeleisen, 19 to 21 per cent domestic furnace	32.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do, less carload	88.50
Do, 75 per cent	130.00 to 150.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb. con., del.	11.00
Do., for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	93.00
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium, carload, producers plant, net ton	200.00
Ferrophosphorus, per ton, carload, 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91.00
Ferrophosphorus, electrolytic, per ton, carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

*These prices contract; spot $5 higher.

Plates

Pittsburgh Mill Operations Expand—Larger Inquiries for Vessels and Oil Tanks

PLATE mill operations in the Pittsburgh district are more active. About 25,000 tons of finished steel, mainly plates, is pending before makers there, largely in inquiries for river craft. Chicago mills are booked well, except for the wider sizes. For Norfolk & Western railroad car repairs 2000 tons of plate will be needed. For second quarter 1.90c Pittsburgh, is quoted.

PLATE PRICES, PAGE 522

Pittsburgh, Feb. 21.—More than 25,000 tons of steel, mainly plates, is up for early attention in the Pittsburgh area, largely for river craft. In addition to the Mississippi river commission's inquiry for 35 to 40 barges noted last week, the Union Barge Line wants 50. The Marmet Coal Co., Kanawha, W. Va., wants six towboats and a fleet of barges. Numerous other buyers are in the market for two, three or four stock barges and several sales of the latter again have been made by the Dravo Contracting Co. A few tanks are up for southwestern installation. The leading maker has opened second quarter books at 1.90c.

Cleveland, Feb. 21.—Two thousand tons or more of plates to be required by the Ralston Steel Car Co. for repairing 1000 Norfolk & Western hopper cars is expected to go to a Pittsburgh mill. Plate orders on the whole have not quite measured up to the corresponding period of January. Inquiry for special plates continues fairly heavy. For second quarter 1.90c Pittsburgh, is asked.

Chicago, Feb. 21.—About 2000 tons of tank plates has come out in new inquiry from the Southwest. The 2500 tons of tank plates for the Magnolia Petroleum Co. will go to a southern plate producer. While specifications for plates from the car building shops and from general manufacturing and building lines are active, it is understood mills would welcome heavier backlogs in wider plates. Deliveries on sheared plates are two to four weeks deferred, while universal plate deliveries have been lengthened to five or six weeks. Users are specifying heavily on 1.90c contracts. For second quarter 2.00c is asked.

Philadelphia, Feb. 21.—Eastern plate mill operations have dropped to 50 to 60 per cent. Prices are unchanged at 2.00c, base, Coatesville, and 2.10c, Philadelphia. The Pennsylvania railroad has definitely abandoned for the present its marine program involving carfloats and lighters on which it recently opened bids.

CONTRACTS PLACED

2500 tons, tanks for Magnolia Petroleum Co., to Reeves Bros. Co. noted last week as unstated company.

2317 tons, special treatment plates for modernizing battleships OKLAHOMA and NEVADA, to Carnegie Steel Co.

1000 tons, refinery for Standard Oil Co., at El Paso, Tex., to Chicago Bridge & Iron Works.

500 tons, four barges from stock for E. J. Hall Corp., Cincinnati, to Dravo Contracting Co.

180 tons, two sand barges for Muskingum River Sand & Gravel Co., Zanesville, O., to Jones & Laughlin Steel Corp.

150 tons, one barge for Rufus Sand & Material Co., St. Louis, to Dravo Contracting Co.

125 tons, one steel hull for concrete mixer, 120x45x7 feet for Mississippi river commission, Memphis, Tenn., to Midland Barge Co.

CONTRACTS PENDING

6000 tons, 50 barges, only nine or ten of which are to be bought at present, for Union Barge Line Corp.; bids being taken.

5000 tons, 35 to 40 barges for Mississippi river commission, Memphis, Tenn.; bids to be opened March 3.

2000 tons, penstock for Seattle; bids opened.

1300 tons, penstock for Southern California Edison Co., Los Angeles; bids being taken.

650 tons, penstock for Milton, Oreg.; bids in Feb. 20.

500 tons, towboat for Vesta Coal Co., Pittsburgh; bids about to be asked.

100 tons, pipe line for East Palo Alto water works district, Redwood City, Calif.; bids opened.

Unstated tonnage, six towboats and fleet of barges for Marmet Coal Co., Kanawha, W. Va.; bids about to be asked.

February business of the Atlas Steel Co., Dunkirk, N. Y., has been greater than in January, in turn 25 per cent ahead of December. More men have been added.

Semifinished

Specifications and Shipments Improve—Sheet Bars Shaded in Quiet Sales

IMPROVEMENT is reported in the volume of specifications for semifinished steel. While few open market transactions are noted, contracts are closed quietly between consumers and producers for a month or more ahead. Shipments of forging billets are more active than in some weeks. Sheet bars have been shaded in quietly-closed deals.

SEMIFINISHED STEEL PRICES, PAGE 522

Pittsburgh, Feb. 21.—Semifinished steel specifications continue to expand. New business is not appearing in the open market. Private deals are being closed quietly between nonintegrated mills and supply sources. Prices are $33 for billets and slabs and $34 for sheet bars. Forging billet specifications are growing more favorable. Wire rods are $44. Skelp is quiet. Some sales in Canada recently were arranged at a low price to meet foreign competition. Domestic business is firm at 1.85c. One skelp buyer whose needs have been met for several years by a Pittsburgh mill is understood to be planning to concentrate upon conduit production.

Philadelphia, Feb. 21.—Five or six consumers bought billets in the past week, the total over 1000 tons. The price is $33, base, Pittsburgh, for rerollers and $38 for forging quality. Wire rods generally are $44, Pittsburgh.

Youngstown, O., Feb. 21.—With more open hearths on and longer working hours in the bessemer departments of most district plants, shipments of semifinished steel are increasing. This especially is true of sheet bars and slabs. The usual quotation on these products is $34, Pittsburgh and Youngstown, for sheet bars and $33 for billets and slabs.

Cleveland, Feb. 21.—Specifications for sheet bars, billets and slabs continue fairly active. While $33, Cleveland, is the open market quotation on all three grades, some concessions are reported.

Chicago, Feb. 21.—Specifications for semifinished steel with regular sources of supply are being placed steadily. February requirements are somewhat heavier than a month ago. Billets, 4 x 4-inch base, are $33, Chicago. Wire rods are steady at $45.

River Shipments Rise

Pittsburgh, Feb. 21.—Shipments of iron and steel on the Monongahela river in January totaled 78,069 tons, making an increase over the December shipments of 65,922 tons. Ohio river shipments of similar commodities totaled 69,750 tons, and on the Allegheny river, 330 tons. This made a total for the three rivers of 154,149 tons, compared with 135,294 tons in December.

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Delivered to Consumers.

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.75 to 11.00
Boston (dealers)	9.00 to 9.10
Buffalo, No. 1	15.00 to 15.25
Buffalo, No. 2	13.25 to 13.75
Chicago	13.00 to 13.50
Cincinnati (dealers)	11.50 to 12.00
Cleveland, No. 1	13.75 to 14.00
Cleveland, No. 2	13.25 to 13.50
Detroit, No. 1	11.25 to 11.75
Eastern Pennsylvania	13.50 to 14.00
Eastern Pennsylvania, No. 2	11.00 to 11.50
Bethlehem delivery	13.50 to 14.00
New York (dealers) (railroad)	10.00 to 10.85
New York (dealers) (yard)	7.00 to 7.50
Pittsburgh, No. 1	15.00 to 15.50
St. Louis	11.75 to 12.25
Valleys, No. 1	15.00 to 15.25

COMPRESSED SHEETS

Buffalo	13.50 to 14.00
Chicago	10.75 to 11.25
Cleveland	12.50 to 13.00
Detroit	10.25 to 10.75
Pittsburgh	14.25 to 14.75
Valleys	14.00 to 14.50

BUNDLED SHEETS

Buffalo	10.00 to 10.50
Cincinnati (dealers)	9.50 to 10.00
Cleveland	11.50 to 12.00
Eastern Pennsylvania	10.50 to 11.00
Pittsburgh	13.25 to 13.75
St. Louis	7.75 to 8.25

SHEET CLIPPINGS, LOOSE

Chicago	8.25 to 8.75
Cincinnati	8.75 to 9.25
Detroit	7.00 to 7.50
St. Louis	7.50 to 8.00

STEEL RAILS, SHORT

Birmingham	11.50 to 12.00
Buffalo	16.50 to 17.00
Chicago	15.50 to 16.00
Cincinnati (dealers)	16.00 to 16.50
Detroit	11.00 to 11.50
St. Louis	16.00 to 16.50

STOVE PLATE

Birmingham	13.00 to 14.00
Boston (consumers)	10.50 to 11.00
Buffalo	12.75 to 13.25
Chicago (net)	12.00 to 12.50
Cincinnati (dealers) net	9.00 to 9.50
Cleveland	12.00 to 12.50
Detroit (net tons)	10.50 to 11.00
Eastern Pennsylvania	12.50 to 13.00
New York (dealers) (mill)	8.25 to 8.50
Pittsburgh	12.50 to 12.75
St. Louis	13.50 to 14.00

LOW PHOSPHORUS

Buffalo, billet and bloom crops	16.75 to 17.25
Cincinnati (dealers)	13.00 to 13.50
Eastern Pennsylvania	17.50 to 18.50
Pitts. billet and bloom crops	18.50 to 19.00
Cleveland, billet, bloom crops	17.00 to17.50

SHOVELING STEEL

Chicago	13.00 to 13.50
Pittsburgh	11.00 to 11.50
St. Louis	11.75 to 12.25

KNUCKLES, COUPLERS, SPRINGS

Chicago	14.50 to 15.00
Eastern Pennsylvania	16.50 to 17.00
Pittsburgh	16.75 to 17.25
St. Louis	13.50 to 14.00
Buffalo	16.00 to 16.50

FROGS, SWITCHES, GUARDS

Chicago	14.00 to 14.50
St. Louis	14.00 to 14.50

ANGLE BARS—STEEL

Buffalo	14.50 to 15.00
Chicago	14.50 to 15.00
St. Louis	12.25 to 12.75

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	11.00 to 12.00
Boston (dealers)	10.00 to 10.50
Buffalo, No. 1	12.25 to 12.75
Buffalo, No. 2	14.25 to 14.75
Chicago, No. 1	12.35 to 12.90
Chicago, No. 2	13.00 to 13.50
Cincinnati, No. 1 (dealers)	11.00 to 11.50
Cleveland, No. 1	11.50 to 12.00
Eastern Pennsylvania	15.00 to 15.50
New York, No. 1 (dealers)	11.00 to 11.50
Pittsburgh, No. 1	11.00 to 11.50
Pittsburgh, No. 2	15.00 to 15.50
St. Louis, No. 1	10.25 to 10.75
St. Louis, No. 2	11.75 to 12.25

WROUGHT PIPE

Boston (dealers)	8.00 to 8.50
Eastern Pennsylvania	13.00
Buffalo	12.00to 12.50
New York (dealers)	8.75 to 9.25

YARD WROUGHT

Boston	9.50 to 10.00
Eastern Pennsylvania	14.50 to 15.00

BUSHELING

Buffalo	13.25 to 13.75
Chicago, No. 1	10.50 to 11.00
Chicago, No. 2	8.50 to 9.00
Cincinnati, No. 1 (dealers)	10.50 to 11.00
Cincinnati, No. 2	7.00 to 7.50
Cleveland, No. 2	10.25 to 10.75
Pittsburgh, No. 1	12.00 to 12.50
St. Louis, No. 1	9.75 to 10.25

MACHINE SHOP TURNINGS

Birmingham	8.00 to 9.00
Boston	6.00 to 6.50
Buffalo	9.50 to 10.00
Chicago	8.00 to 8.50
Cincinnati (dealers)	8.50 to 9.00
Cleveland	9.00 to 9.25
Detroit	7.00 to 7.25
Eastern Pennsylvania	11.00
New York (dealers)	7.00 to 7.50
Pittsburgh	10.50 to 11.00
St. Louis	7.75 to 8.25

CAST IRON BORINGS

Birmingham (chemical)	13.00 to 13.50
Birmingham (plain)	8.00 to 9.00
Boston (chemical)	10.00 to 10.50
Boston (dealers)	6.00 to 6.50
Buffalo	10.25 to 10.75
Chicago	10.00 to 10.25
Cincinnati (dealers)	8.75 to 9.25
Cleveland	10.25 to 10.75
Detroit	8.25 to 8.50
Eastern Pennsylvania	11.00 to 11.50
Eastern Pennsylvania (chem.)	15.00 to 15.50
New York (dealers)	6.75 to 7.35
Pittsburgh	11.00 to 11.50
St. Louis	9.00 to 9.50
Valleys	13.50

MIXED BORINGS AND TURNINGS

For blast furnace use

Boston (dealers)	6.00 to 6.25
Buffalo	10.25 to 10.75
Cincinnati (dealers)	8.75 to 9.25
Cleveland	10.25 to 10.75
Detroit	8.00 to 8.25
Eastern Pennsylvania	10.50 to 11.00
New York (dealers)	6.75 to 7.35
Pittsburgh	11.00 to 11.50

PIPES AND FLUES

Chicago (net)	8.50 to 9.00
Cincinnati (dealers)	8.00 to 8.50
St. Louis	9.50 to 10.00

RAILROAD GRATE BARS

Buffalo	11.00 to 11.50
Chicago (net)	12.25 to 12.75
Cleveland	12.00 to 12.50
Eastern Pennsylvania	12.50 to 13.00
New York (dealers)	8.25 to 8.75
St. Louis	12.00 to 12.50

FORGE FLASHINGS

Boston (dealers)	6.50 to 7.00
Buffalo	12.00 to 12.50
Chicago	9.50 to 10.00
Cleveland (over 10 in.)	12.50 to 13.00
Detroit	9.50 to 10.00
Pittsburgh	13.50 to 14.00

FORGE SCRAP

Boston (dealers)	6.00 to 6.50
Chicago	15.50 to 16.00
Eastern Pennsylvania	11.00

ARCH BARS AND TRANSOMS

Chicago (net)	18.50 to 19.00
St. Louis	21.00 to 21.50

Iron and Steel Works Scrap

AXLE TURNINGS

Boston (dealers)	6.75 to 7.00
Buffalo	13.00 to 13.50
Chicago	10.25 to 10.75
Cleveland	12.00 to 12.25
Eastern Pennsylvania	12.00 to 12.50
Pittsburgh	13.00 to 13.50
St. Louis	10.00 to 10.50

STEEL CAR AXLES

Birmingham	16.00 to 17.00
Boston (shipping point)	15.50 to 16.00
Buffalo	16.75 to 17.25
Chicago	17.90 to 18.50
Cleveland	16.00 to 16.50
Eastern Pennsylvania	21.00 to 22.00
Pittsburgh	18.00 to 18.50
St. Louis	20.00 to 20.50

SHAFTING

Boston (shipping point)	13.00 to 13.50
Chicago	16.80 to 17.35
Eastern Pennsylvania	17.50 to 18.00
New York (dealers)	14.00 to 14.50
St. Louis	17.00 to 17.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	14.00 to 15.00
Boston (consumers)	14.00 to 14.50
Buffalo, iron	13.25 to 13.75
Buffalo, steel	16.00 to 16.50
Chicago, iron	14.25 to 14.75
Chicago, rolled steel	15.50 to 16.00
Cincinnati	12.50 to 13.00
Eastern Pennsylvania	16.00 to 16.50
New York iron (dealers)	12.00
Pittsburgh, iron	14.75 to 15.25
Pittsburgh, steel	16.75 to 17.25
St. Louis, iron	14.25 to 14.75
St. Louis, steel	14.25 to 14.75

NO. 1 CAST SCRAP

Birmingham, cupola	14.00 to 14.50
Boston	14.50 to 15.00
Buffalo	14.50 to 15.00
Chicago, No. 1 machinery	15.85 to 16.25
Chicago, No. 1 railroad	14.85 to 15.40
Chicago, No. 1 agricultural	14.55 to 15.10
Cincinnati No. 1 machinery cupola (net tons dealers)	14.50 to 15.00
Cleveland, cupola	16.50 to 17.00
Detroit (net tons)	12.25 to 12.75
Eastern Pennsylvania (cupola)	16.50 to 17.00
New York, cupola (dealers)	13.50
Pittsburgh, cupola	14.50 to 15.00
San Francisco, delivered	20.00 to 21.00
Seattle	14.50 to 14.75
St. Louis, railroad	13.50 to 14.00
St. Louis, agricultural	13.50 to 14.00
St. Louis, machinery	14.00 to 14.50
Valleys	16.50 to 17.00

HEAVY CAST

Boston	10.50 to 11.00
Buffalo (breakable)	11.50 to 12.00
Cleveland (breakable)	12.25 to 12.50
Detroit (automobile) (net tons)	20.00 to 21.00
Eastern Pennsylvania	15.50 to 16.00
New York (dealers)	11.75 to 12.00
Pittsburgh	13.00 to 13.50

MALLEABLE

Boston, railroad	13.50 to 14.00
Buffalo	15.25 to 15.75
Chicago, agricultural	11.75 to 12.25
Chicago, railroad	12.75 to 13.25
Cincinnati, railroad (dealers)	12.50 to 13.00
Cincinnati, agricultural (dealers)	12.25 to 12.75
Cleveland, agricultural	15.00 to 15.50
Cleveland, railroad	15.50 to 16.00
Detroit, auto	14.50 to 15.00
Pittsburgh, railroad	14.50 to 15.00
St. Louis, agricultural	12.50 to 13.00
St. Louis, railroad	12.50 to 13.00

Miscellaneous Scrap

RAILS FOR ROLLING

5 feet and over

Birmingham	13.50 to 14.00
Boston (dealers)	10.00 to 10.50
Buffalo	14.50 to 15.00
Chicago	15.00 to 15.50
Eastern Pennsylvania	15.25 to 15.50
New York	11.00 to 12.00
Pittsburgh district	16.25 to 16.75
St. Louis	14.25 to 14.75

LOCOMOTIVE TIRES

Chicago, No. 1	14.00 to 14.50
Chicago, cut	16.00 to 16.50
St. Louis, No. 1	12.50 to 13.00

LOW PHOSPHORUS PUNCHINGS

Chicago	14.00 to 14.50
Pittsburgh	16.50 to 17.00

Scrap

Revival in Activity Delayed—Prices Show Little Change—Shorts Absorb Offerings

DEFERMENT of the expected activity in iron and steel scrap is seen in all trading centers and dealers are wary of obligating themselves far ahead. Consumers find it difficult to obtain tonnages at prices they offer. Sufficient short interest exists to take most offerings, and distress scrap is absent. Prices show little change anywhere.

Chicago, Feb. 21.—While heavy melting steel has advanced to $13 to $13.50, a few other grades of iron and steel scrap show weakness. Most grades, on the other hand, show little change from the past ten days. A leading steelworks consumer purchased 20,000 tons of heavy melting steel at $13.50. Another consumer purchased a round tonnage at $13, this buyer having less rigid inspection. The rigid specification of one consumer in effect places its material as a separate grade of melting steel. Cast borings are weaker. Only one consumer is active and is paying $10.25. Offers of $10.50 by sellers have been refused.

Boston, Feb. 21.—Business continues in limited volume. Shipments outside of New England showed a falling off recently, mainly because dealers find it more difficult to get material at prices offered by melters. In some lines prices have developed rather a wide range.

New York, Feb. 21.—Dealers' scrap prices are unchanged, with market generally quiet. With few exceptions, consumers are buying sparingly, and at the moment no material improvement is expected. Machinery cast appears in slightly better demand, but notwithstanding the relative scarcity of this material, prices appear steady.

Philadelphia, Feb. 21.—Hand to mouth buying continues to feature the iron and steel scrap market. Buying includes many lots of 1000 to 2000 tons each. Prices are unchanged except wrought pipe, which is now $13, and turnings, now $11.

Buffalo, Feb. 21.—While some dealers assert scrap retains strength others report a decline of about 25 cents a ton on offers for heavy melting steel and some other materials. Demand is not active although large tonnages remain to be shipped on recent contracts.

Pittsburgh, Feb. 21.—Short interests quickly cover scrap offerings and so keep the market clear. Occasionally small lots are peddled but usually prices are too high to inspire interest. Because of consumer indifference price advances are difficult. A nearby sheet interest has tried to purchase more machine shop turnings at $11, and additional heavy breakable cast at $13, but cannot find tonnages at those figures. Some steel specialty buyers among steel foundries bought lots up to 500 tons at a time at $17.10 and $17.25.

Cleveland, Feb. 21.—Iron and steel scrap fails to keep pace with the improved situation in the steel industry. Mills in this district and in the valley are regulating shipments closely, and old material continues to come out more freely than it can be absorbed. Some consumers are holding up all shipments. Prices are unchanged but in many cases nominal. No. 1 heavy melting steel is quoted at $13.75 to $14 in Cleveland and $15 to $15.25 in the Valley. Blast furnace grades are offered at $10.25 to $10.75. Cast grades are quiet.

Cincinnati, Feb. 21.—Sentiment among scrap dealers is pessimistic, and general opinion is that any upward movement will not come until much later than expected. Shipments on contracts to nearby mills have been of fair proportions, but forward buying has been almost at a standstill. Prices are holding well under lack of consumer interest.

St. Louis, Feb. 21.—Weakness continues in iron and steel scrap. This is due to several causes, the chief being that mills have covered on their needs, and are awaiting new orders for their products before increasing raw material commitments. Country dealers are shipping heavily. On the recent upturn in prices country shipping points were able for the first time in months to move their accumulations.

Birmingham, Ala., Feb. 21.—Activity is lacking in iron and steel scrap and conditions are unchanged. Heavy melting steel continues at $10.75, delivered.

Gives Foundry Talk

"The three graces of the foundry industry, gating, heading and venting, often become its disgraces," said J. Ramsey Speer, president, Mackintosh-Hemphill Co., Pittsburgh, before a meeting of the Pittsburgh Foundrymen's association, Feb. 20, in presenting a paper "Where the Foundryman Finds Profit." The speaker said it is the man who accomplishes these three things most successfully and economically who makes a profit. Closest and strictest attention paid to all variables, even to the weather, pays dividends and watching every step along the line with personal interest is bound to lead to profit.

Sheets

Demand Continues to Improve—Valley Mills Increase Output—Terne Plate Price Advanced

SHEET specifications are active, especially from users in the Middle West. Some consumers are ordering additional tonnages to round out first quarter requirements, and orders for second quarter also are being taken. Valley mills have increased their output. Makers of terne plate in the Mahoning valley have advanced prices $4 to $6 a ton.

SHEET PRICES, PAGE 522

Youngstown, O., Feb. 21.—Sheet output has increased at independent plants, due to working more hours weekly, although the number of mills operating is not so large as a week ago. Makers of two lines of sheet products have reaffirmed quotations for second quarter as well as for new purchases. Terne plate makers have named 4.10c, Pittsburgh, an advance of $4 to $6 a ton. Makers of high silicon electrical sheets, U. S. standard, also reaffirmed for second quarter the quotation of 4.25c, Pittsburgh. Black sheets are 2.90c and galvanized 3.75c. Independent plants here this week operate at 85 per cent, against 87 per cent last week and 71 per cent two weeks ago.

New York, Feb. 21.—Sheet demand on contracts continue satisfactory. It appears daily average bookings in this territory for February will be fully equal to the average in January. In several cases prospective buyers say black sheets have been offered to them below 2.90c, base, Pittsburgh. Prices, however, are not receiving a real test. The attitude of most makers is firm with respect to 2.10c, base, Pittsburgh, on blue annealed, 2.90c on black and 3.75c on galvanized.

Buffalo, Feb. 21.—Heavy demand has developed for automobile sheets. Mill operation is close to 85 per cent. Black sheets are steady at 2.90c, base, Pittsburgh.

Chicago, Feb. 21.—Mills are accumulating backlogs of sheet specifications for the first time in some weeks. In some cases it is difficult to make delivery before the end of this month. A leading producer has specifications for four to five weeks. Contracts are being placed for sec-

ond quarter at prices that have carried over. The market recently has been tested by some heavy tonnage orders. The Chicago delivered prices are 3.05c for No. 24 black; 3.90c for No. 24 galvanized; and 2.25c to 2.35c for No. 10 blue annealed.

St. Louis, Feb. 21.—The volume of incoming business in sheets has decreased slightly due to the firmer attitude of producers and distributors. Shipments are holding up well with specifications satisfactory.

Pittsburgh, Feb. 21.—Active specifying, frequent new buying to augment first quarter tonnages, less price resistance, and occasional booking of second quarter contracts feature the sheet market. Most of the business appears coming from the Middle West. Diversified users, including agricultural implement manufacturers, are taking more galvanized and blue annealed sheets; metal roof manufacturers are busy, as are users of electrical sheets. Consumers of full finished sheets are well represented in shipping instructions. Mill backlogs are growing. Additional unsuccessful efforts have been made to add to first quarter contract tonnages at old levels. As much as a 10 per cent increase has been accepted, but more than that is taken only at the new prices. In one case several hundred tons was accepted for March delivery at the old prices, an additional larger quantity will be shipped in April at the new prices, and at the same time several thousand tons were booked for second quarter delivery at the new levels. While considerable sales resistance is offered by full finished sheet buyers several attractive lots have been booked. Full finished sheets are quoted at 4.15c, blue annealed at 2.10c, plus 10 cents for wide material; black at 2.90c, and galvanized at 3.75c. Operations are maintained at 80 to 85 per cent. American Sheet & Tin Plate Co. went up another point, to 77 per cent, last week.

Cleveland, Feb. 21.—Slackening in the flow of specifications to sheet mills was noted in this territory during the week. Although some makers continue to operate 100 per cent of capacity, backlogs have diminished and in some cases production is being scheduled for a decrease next week. Contracting for second quarter is slow in developing, buyers being uncertain from experience whether the new price will hold, and being covered for considerable tonnage yet to be taken out before April 1. Prices are firm on blue annealed at 2.10c, Pittsburgh, black at 2.90c, Pittsburgh, and autobody at 4.15c. Galvanized is fairly steady at 3.65c to 3.75c, Pittsburgh.

Iron and Steel Index Rises

Washington, Feb. 21.—January wholesale price index for iron and steel was 93.9, against 93.7 in December and 99.2 last January, taking 1926 as 100, according to the department of labor. January index for nonferrous metals was 91.7, against 92.3 in December and 94.8 for January, 1927.

Tin Plate

New Inquiries Moderate—Price Is Firm

TIN PLATE PRICES, PAGE 522

Pittsburgh, Feb. 21.—Domestic tin plate business is gradually being discharged as specifications against contracts develop. From time to time new inquiries come out. One from an oil company calls for 100,000 base boxes. Some export business appears intermittently, in quantities from 50,000 to 100,000 base boxes. The outlook is favorable for 1928. The price is firm at $5.25.

The American Society of Mechanical Engineers reports that its new weekly engineering index service is in good demand and that its subscribers exceed the number who subscribed for the old service. The editorial and production departments began to trial-function separately on Dec. 1 but will be co-ordinated shortly. Major Carlos de Zafra, director of the index, feels that before the new year is half over, the society will feel fully justified in having taken such a bold step in serving the interests of industry and science.

Barberton Rates Unfair

Washington, Feb. 21.—The rate charged on iron and steel articles, in carloads, from Pittsburgh and certain other points in western Pennsylvania to Barberton, O., and from Barberton to Munhall and Rankin, Pa., have been found unreasonable by the interstate commerce commission in a decision in the case of Babcock & Wilcox Co. against the Pennsylvania railroad.

Pipe

Large Line Inquiries Inactive—Cast Market Featured with 2000-Ton Letting at Detroit

LINE pipe market activity is confined to shipments against mill orders and contemplation of prospective spring programs. Cast pipe during the week was featured by the rejection of French bids and awarding of 2000 tons by Detroit to three domestic makers. Prices are steadier, with Birmingham makers having three to six weeks' backlogs.

PIPE PRICES, PAGE 522

Pittsburgh, Feb. 21.—Another reduction in the price of mid-continent oil last week does not lend much encouragement to the oil situation, and the oil country pipemakers see nothing in the way of increased demand for this year. No oil country lines are up but gas lines continue to be projected. One or two 20 and 22-inch lines undoubtedly will be purchased early this spring. The Hope Engineering & Supply Co. has been awarded contracts for the construction by next May of main transmission lines of the Inland Gas Corp. from Prestonburg to Ashland, Ky.

Standard full weight merchant pipe jobbers order intermittently in harmony with needs or replacements. Heavy stocks are not maintained anywhere, the mills being looked to maintain sufficient supplies to meet demands for prompt deliveries.

New York, Feb. 21.—Inquiry for oil pipe line requirements has improved. In addition to one inquiry, involving about 150,000 tons of steel pipe, quite a few under negotiation involve 300 to 1000 tons each.

The local department of water supply, gas and electricity, is commencing to enter the market for cast pipe. Present specifications call for about 1500 tons and further sizable specifications are expected out shortly. The market generally is quiet, with prices unchanged.

Chicago, Feb. 21.—Winter buying of cast iron water pipe in this territory is spotty. Small contract awards are numerous, but municipal jobs are scarcer. Saginaw, Mich., is in the market for 475 tons of 6 to 24-inch pipe, and Chicago will open bids soon for 1633 tons of 8 and 12-inch pipe. The 2000 tons of 24-inch class B pipe for Detroit was divided among James B. Clow & Sons, American Cast Iron Pipe Co., and National Cast Iron Pipe Co., on the basis of about $30, base Birmingham. The French bid was rejected.

Birmingham, Ala., Feb. 21.—Lettings for cast iron pressure pipe have been accumulating and backlogs of six to eight weeks are on hand, but the market is weak. In this season three months' business should be in hand. Quotations are firm on the $28 base for 6-inch and over sizes. Shipments are steady but considerable stock is on hand.

CONTRACTS PLACED

2000 tons, 24-inch class B pipe for Detroit, divided among James B. Clow & Sons, American Cast Iron Pipe Co., and National Cast Iron Pipe Co., all bidding around $30 base Birmingham.

500 tons, 6 and 8-inch pipe for Hartford,

Conn., to National Cast Iron Pipe Co.
192 tons, 4 to 8-inch class 150, Pasadena, Calif., to American Cast Iron Pipe Co.

CONTRACTS PENDING

2000 tons, 6 to 20-inch cast pipe for water department, New York; bids open Feb. 27.
1964 tons, 6 and 8-inch class 350, Los Angeles; B. Nicoll & Co. low bidder.
1633 tons, 8 and 12-inch pipe for Chicago; bids received Feb. 29.
1000 tons, miscellaneous sizes of cast pipe, including 20 and 24-inch sizes, for department of water supply, gas and electricity, New York; general contractors' bids to be opened Feb. 24.
526 tons, 4 to 8-inch class B, East Palo water waterwords district, Redwood City, Calif.; bids opened.
500 tons, approximately, 16 and 20-inch cast pipe for department of water supply, gas and electricity, New Yorw; direct bids asked.
475 tons, 6 to 24-inch pipe for Saginaw, Mich.; bids received Feb. 21.
426 tons, 4 to 12-inch class B, improvement to Saturn avenue, Huntington Park, Calif.; bids in Feb. 20.
400 tons, 6 to 12-inch cast pipe, Schenectady, N. Y.; bids to be opened Feb. 23.

Iron Ore

Market Is Not Yet Active—Stocks Lower Than Year Ago

IRON ORE PRICES, PAGE 553

Cleveland, Feb. 21.—Some consumers of Lake Superior iron ore are estimating their requirements for the season, and preliminary negotiations have been undertaken in a few instances, but open market inquiries have not developed, and prices are not yet determined. The general assumption in the trade is that prices will not be changed from last year.

Consumption of Lake Superior iron ore in January increased 311,033 tons over December. Stocks at furnaces and on Lake Erie docks Feb. 1 were 621,036 tons less than on the comparable date in 1927. The following details are from the report from the Lake Superior Iron Ore association:

	Tons
Ore consumed in December	3,992,099
Ore consumed in January	4,303,132
Increase in January	311,033
Ore consumed in January, 1927	4,523,863
Ore on hand at furnaces Feb. 1 1928	27,061,994
Ore on Lake Erie docks, Feb. 1, 1928	6,288,000
Total at furnaces and Lake docks, Feb. 1, 1928	33,349,994
Total at furnaces and Lake Erie docks Feb. 1, 1927	33,971,030

Speed Reorganization

Toronto, Ont., Feb. 21.—Charles B. McNaught, new president of the British Empire Steel Corp., and J. H. Gundy have been conferring with officials of Nova Scotia relative to a new program for the corporation. The appeal to the privy council from the order of the Nova Scotia courts for winding up the subsidiary Dominion Steel Corp. has been withdrawn and negotiations for settlement with the National Trust Co., the receivers, are in progress.

Bars

Strong Demand and Heavy Shipments, with Deliveries Deferred—Prices Are Advanced

STRONG buying and active specifying prevail in all producing districts, soft steel bars being a leader in activity. Some mills have worked out low-priced contracts and are shipping tonnage at the new level, with sufficient on order books for several weeks. At Chicago deliveries are four to six weeks deferred. Leading producer now asks 1.90c, Pittsburgh, and 2.00c, Chicago.

BAR PRICES, PAGE 522

Chicago, Feb. 21.—Some active spot buying in bar products, as well as in plates and shapes, placed the week far above the average for 1927 in new buying. January-February finished steel specifications are continuing, with specifications the past week, the second best this year. One producer finds his February specifications 15 to 20 per cent above last month. Shipments are heavy, deliveries on all finished products being lengthened to four or six weeks. The fact that a number of buyers are in the spot market gives indication that contracting for first quarter may have been more cautious than was indicated because of the price advance. Soft steel bar mill operations are above 90 per cent, and alloy steel bar mills are above 80 per cent. Indicated automotive schedules for March show no drop. Heavy January and early February shipments to the farm implement industry are followed by a slight slackening in specifications.

The leading maker has opened second quarter books at 2.00c, with 2.05c on small lots.

Rail steel bars are in good demand from general manufacturing and farm implement lines. The price is 1.80c to 1.85c, Chicago Heights. Bar iron is steady at 1.95c.

New York, Feb. 21.—Merchant bar specifications reflect improvement from the standpoint of the eastern territory as a whole. This business is composed mainly of specifications on contracts placed at lower prices than now prevailing. These contracts generally are on the books at 1.80c, base, Pittsburgh, and some at 1.75c, base Pittsburgh. For second quarter 1.90c, Pittsburgh, is now asked.

Buffalo, Feb. 21.—Prices on steel bars are holding firm. Steelworks operation reached close to 85 per cent last week end but open hearth operations dropped probably 5 per cent at the beginning of this week, due to repair work on some units.

Pittsburgh, Feb. 21.—Merchant steel bar shipments and orders are increasing. Specifications against contracts are numerous and in some cases shippers already have worked out low-priced contracts and are starting upon 1.85c tonnage with three to five weeks' dating. Jobbers are ordering a little more freely. Cold bar finishers are calling for expedited deliveries, the automotive trade being more insistent upon prompt shipment. Automobile spring makers also are getting busier. The leading maker as of Feb. 22 goes to 1.90c, base Pittsburgh.

Youngstown, O., Feb. 21.—Some steel bar makers are quietly covering some customers' needs into second quarter at 1.85c, Pittsburgh, which is the firm price on today's business. This also includes reaffirmation of the band quotation to 2.25c to 2.40c, Pittsburgh, for 3-inch and under. Intimations are not lacking that, because of the steady inflow of bar specifications from all consumers and the consequent activity of the mills, it is not unlikely that higher quotations may follow.

Cleveland, Feb. 21.—With most makers, sales of soft steel bars thus far in February exceed those in the comparable period of January. The automotive industry leads in creating this demand. Bolt, nut and rivet makers are taking fair tonnages. Practically prompt shipments still can be made by the mills. As of Feb. 22 second quarter books will be opened by the leading maker at 1.90c, Pittsburgh.

Washington, Feb. 21.—Navy department opens bids March 6 on 500 tons of bars.

Philadelphia, Feb. 21.—Steel bar demand is somewhat improved in this territory, especially specifications on first quarter contracts. Little new business is being booked.

Issues Bar Standard

The department of commerce, Washington, is distributing a bulletin setting forth the standard recently adopted for new billet steel reinforcing bars and tracing the history of the discussion leading to its adoption. The intermediate grade is the one agreed upon as the standard. The standard became effective Jan. 1, 1928, for new production and is applicable as of March 1, 1928, for the clearing of spot stocks.

Canada for Research

The Canadian house of commons, at Ottawa, Ont., has appropriated $750,000 for the proposed national research council laboratory. A total of $3,000,000 is to be spent for the bureau and a site of ten acres at Ottawa for the first unit has been chosen.

Structural Shapes

Awards and Inquiries Numerous but Mostly Small—83,000 Tons Pending at Chicago Including 10,000-Ton Garage

AWARDS and inquiries of the week include numerous small projects. New inquiries are augmented by a 10,000-ton garage for Chicago where a total of 83,000 tons of work now is pending. This includes the 45,000-ton Marshall Field warehouse and wholesale store soon to be placed. The most marked development in the market during the week was the resumption of activity on a large scale by the New York Metropolitan district. A 63-story building and two large hotel structures are being planned for construction this spring.

Plain material price advances have had a stimulating effect on construction, and many tonnages are being negotiated quietly, to take advantage of protections.

STRUCTURAL SHAPE PRICES, PAGE 522

New York, Feb. 21.—Structural orders and inquiries are more numerous, with the latter involving some particularly sizable tonnages. A hotel at Seventh avenue and Forty-third street will take 2500 tons and a plant addition in Cumberland, Md., 3000 tons. In addition, specifications are now being issued for a 63-story building at Forty-second and Lexington avenue, requiring a large tonnage. Hotels at Thirty-fourth street and Eighth avenue and Thirty-ninth street and Park avenue will be in the market in the relatively near future, each requiring large quantities of steel. Plain shape prices continue to hold at 2.145c, New York, with fabricating material quotations unsettled.

Boston, Feb. 21.—Another quiet week has elapsed in the structural market with the same unfavorable conditions holding. Prices hold steady on the small quantity of tonnage placed.

Pittsburgh, Feb. 21.—Several structural shape jobs have been awarded in this section, those involving below 100 tons being numerous. It is understood the bridge between Louisville, Ky., and Jeffersonville, Ind., taking 18,000 tons, has been let to McClintic-Marshall Co. Plain material is being specified out freely against contracts, some low priced obligations still being discharged. For second quarter the leading maker is asking 1.90c.

Cleveland, Feb. 21.—Lack of large tonnage projects in this territory is keeping shop operations of fabricators at a low point, some plants operating as low as 35 per cent of capacity. Inquiries are numerous but mostly for small lots. Plain material prices for new business are steady at 1.85c, Pittsburgh, but the leading maker advanced quotations to 1.90c, effective, Feb. 22. Fabricated prices continue to reflect unusually keen competition, a recent project in this territory being placed about $54 a ton, f.o.b., and $68 a ton erected.

Chicago, Feb. 21.—About 83,000 tons of structural steel are pending in the Chicago district and western territory, most of these prospective awards being now in the active stage. Plans have been drawn for a garage to be built near the Chicago loop requiring about 10,000 tons. Marshall Field & Co. warehouse and wholesale store is becoming active and will take about 45,000 tons. Fresh projects of the past week totaled 13,550 tons. Many projects are being started quietly due to the advanced mill prices on plain material. The larger structural shops are well engaged.

The leading maker is asking 2.00c for second quarter.

Philadelphia, Feb. 21.—Although a number of structural steel projects were let here in the past week and a number of new jobs are pending, the tonnage involved is comparatively small and fabricating shops complain of a lack of business. Structural shape demand continues small and eastern mill operations now are decreased to 70 per cent of capacity. Prices range from 2.07c to 2.13c, delivered Philadelphia.

Awards Compared

	Tons
Awards this week	56,174
Awards last week	59,348
Awards two weeks ago	37,690
Awards this week in 1927	21,840
Average weekly awards, Jan.	31,359
Average weekly awards, 1928	53,825
Total awards to date, 1927	298,783
Total awards to date, 1928	376,778

CONTRACTS PLACED

19,000 tons, Chicago Civic Opera building, Chicago, to McClintic-Marshall Co.; previously reported as awarded to unstated fabricator.

18,000 tons, bridge over Ohio river between Louisville, Ky., and Jeffersonville, Ind., for Louisville-Jeffersonville Bridge Co., Louisville, Ky., to McClintic-Marshall Co.

15,000 tons, bridgework for Atchison, Topeka & Santa Fe railroad, to American Bridge Co.

6500 tons, physicians' building, Sutter street, San Francisco, to McClintic-Marshall Co. Central works.

2300 tons, printing building, 247 East Forty-fifth street, New York; noted in last week's issue as placed, went to McClintic-Marshall Co.

1600 tons, Kent Automatic Parking Garage, New York, to Post & McCord.

1500 tons, bridgework for Northern Pacific railroad, to American Bridge Co.

1500 tons, third unit of state capitol, Lincoln, Nebr., to Omaha Steel Works, at $232,000.

850 tons, church, Wilshire boulevard, Los Angeles, to McClintic-Marshall Co.

800 tons, addition and alteration to Pennsylvania station, Journal square, Jersey City, N. J., to American Bridge Co.

710 tons, Whitehouse railroad grade crossing elimination, Garfield Heights, O., to McClintic-Marshall Co.

700 tons, residential hall for women, Cornell university, Ithaca, N. Y., to unnamed fabricator.

700 tons, transmission line, Southern California Edison Co., Los Angeles, to Pacific Coast Steel Co.

650 tons, Pennsylvania railroad bridge, Forty-first street, Philadelphia, to Bethlehem Steel Co.

520 tons, uptown theater and office building, Philadelphia, to Bethlehem Fabricators Inc., previously noted as involving 350 tons.

515 tons building for National Biscuit Co., Pittsburgh, through Lundoff-Bicknell Co., Cleveland, general contractor, to Fort Pitt Bridge Works.

500 tons, washer building for coal tipple at Montour, Pa., to Pittsburgh Bridge & Iron Co.

450 tons, four bridges for Vermont, placed as follows: 350 tons for three bridges to Burlington Construction Co., and 100 tons for one bridge to Albany Bridge Construction Co.

400 tons, plant for Ohio Box Board Co., Ritman, O., awarded unstated fabricator.

400 tons, highway bridge between Glen island and New Rochelle, N. Y., for Westchester county park commission, to Bethlehem Steel Co.

375 tons, Lakeville school, Little Neck, Long island, N. Y., awarded to unnamed fabricator.

358 tons, Piedmont Print Works new mill building at Taylors, S. C., through Potter & Shackelford, Greenville, S. C., general contractors, to Southern Engineering Co., previously announced under "Plates placed."

300 tons, telephone building, Telegraph avenue, Oakland, Calif., to Judson-Pacific Co.

300 tons, Northeastern Title & Trust Co. building, Philadelphia, to Bethlehem Fabricators Inc.

265 tons, for George W. Childs building, New York, to McClintic-Marshall Co.

250 tons, wire and cable plant for American Electrical Works, Phillipsdale, R. I., to Austin Co.

250 tons, shoring beams for Arthur A. Johnson Corp., for subway work, New York, to Bethlehem Steel Co.

235 tons, Wind river bridge, Skamania county, Wash., to Poole & McGonigle.

200 tons, west Moreland suburban station, Philadelphia, to Belmont Iron Works.

200 tons, coal tipple for Pittsburgh Coal Co., Montour, Pa., to John Eichleay Jr. Co.

200 tons, substation for Philadelphia Electric Co., Philadelphia, to Belmont Iron Works.

196 tons, colored Elks home, Philadelphia, to Bethlehem Fabricators Inc.

170 tons, bridgework for state highway commission in Michigan, to Massillon Bridge & Structural Co., previously announced under "Plates Placed."

150 tons, office building, Sixteenth and Locust streets, Philadelphia, to Bethlehem Fabricators Inc.
150 tons, West Philadelphia Title & Trust Co. building, Philadelphia, to Robinson Iron & Steel Co.
150 tons, building for American Gas association, Cleveland, through DeHamel Construction Co., general contractor, to Wellman-Seaver-Morgan Co., reported last week, awarded unstated fabricator.
131 tons, including 90 tons for Central Alloy Steel Corp. buildings, Massillon, O., to Massillon Bridge & Structural Co.
130 tons, apartment, Sixteenth avenue, San Francisco, to Judson-Pacific Co.
130 tons, transport house for Kelly Island Lime & Transport Co., at Marble Head, O., to Reliance Structural Steel Co.
125 tons, Carpenter street bridge for Pennsylvania railroad, Philadelphia, to McClintic-Marshall Co.
110 tons, modernization of battleships OKLAHOMA and NEVADA, to Carnegie Steel Co.
104 tons, ice plant, Maybrook, N. Y., to Bethlehem Fabricators Inc.
100 tons, warehouse, Twenty-fourth street, Oakland, Calif., to Pacific Coast Engineering Co.
100 tons, Famous-Bar store addition, St. Louis, to Mississippi Valley Structural Steel Co.
100 tons, crane girders for Pacific Coast Steel Co., Seattle to Wallace Bridge & Structural Steel Co.
100 tons, structural work for Commonwealth Edison Co. at Fisk avenue station, Chicago, to Vierling Steel Works.
100 tons, turntable and bridge work for several railroads, to Vierling Steel Works.
100 tons, Pennsylvania railroad transmission towers, to Phoenix Iron Co.
100 tons, sand bin for Charles Warner, Marlborough street, Philadelphia, to Montgomery Iron & Steel Co.
100 tons, 2-story addition to Stuart building, for Stuart Investment Co., Lincoln, Nebr., to Paxton & Vierling Iron Works, previously announced under "Plates Placed."
100 tons, design, fabrication and erection of baseball grandstand for Augusta, Ga., to Southern Engineering Co., previously announced under "Plates Placed."
Unstated tonnage, manufacturing building for Fairchild Aviation Co., Farmingdale, Long Island, N. Y., to Austin Co.

CONTRACTS PENDING

20,000 to 25,000 tons, estimated for 55-story office building, East Forty-second street, New York; J. E. Carpenter, architect.
10,000 tons, garage, Chicago; Graven & Meager, Chicago; architects.
4500 tons, Governor Clinton hotel, Seventh avenue and Thirty-first street, New York; bids asked.
3500 tons, New York state office building, New York; Caldwell-Wingate Co. and George Colon Co. tied for low on the general contract, each with a bid of $3,774,000.
3350 tons, Greenpoint avenue bridge over Newton creek, Queens, New York; P. T. Cox Contracting Co., low on the general contract.
3000 tons, plant addition, for Celanese Corp. of America, Cumberland, Md.; bids asked.
1300 tons, building for Northwestern Bell Telephone Co., Des Moines, Iowa.
1200 tons, warehouse for Planters & Shippers Compress Co., Corpus Christi, Tex.
900 tons, theater for Allied Owners Corp., Brooklyn, N. Y.; bids asked.
900 tons, 1928 bridge requirements for Delaware, Lackawanna & Western railroad; bids asked.
835 tons, approach to LaSalle street bridge, Chicago. J. A. Simpson Co. low bidder on general contract; 75 tons of iron and steel castings also required.
800 tons, miscellaneous bridge work, for Pennsylvania railroad; bids asked.
700 tons, power house, for Byllesby interests, San Diego, Calif.; bids being taken.
650 tons, two bridges, at Pekin and Petersburg, Ill., for Chicago & Illinois Midland railroad.
500 tons, Community hotel, Charleston, W. Va.; bids closed Feb. 22.
500 tons, municipal bridge, for Burlington, Vt.; bids open March 1.
450 tons, Market street viaduct, Shreveport, La.
400 tons, hotel addition, Springfield, Mass.; plans complete about Feb. 20.
300 tons, Blum store, Philadelphia; redesigned contract awarded WARK Co.
200 tons, pattern storage building for United States Cast Iron Pipe & Foundry Co., Burlington, N. J.

Concrete Bars

Small Lots Continue to Form Backbone of Activity —Prices Appear Stronger

AWARDS and inquiries in the concrete bar market of the week were small in size, with a total activity comparable to seasonal normal. Spring building construction and roadwork programs are being formulated and some plans for March and April maturity are being launched. Prices appear firmer this week, following general softness of the preceding week.

REINFORCING BAR PRICES, PAGE 522

Chicago, Feb. 21.—While a large number of building projects are being figured by architects and engineers, awards of reinforcing bars are in a lull. The majority of large jobs continue to go rail steel, while billet dealers have been getting considerable small business. The higher mill prices for billet bars tend to strengthen quotations, but attractive bids still bring out some concessions from billet bar sellers. Some shading has been done below 2.30c for billet bars. Rail steel bars are 1.85c to 1.95c, Chicago.

Boston, Feb. 21.—Little prospects are ahead for any large activity in concrete bars. Local interests point out that the period is abnormally dull with no work in prospect to color the immediate future.

Pittsburgh, Feb. 21.—Most concrete bar jobs up for attention involve 15 to 50 tons. That these will increase as the spring building season advances is the expectation of the fabricators. Several 100-ton jobs will close before then. Awards this past week have been negligible. The market is 1.85c to 1.95c, with the minimum increasingly difficult to obtain.

Buffalo, Feb. 21.—Determined efforts are being made to establish a minimum base of 2.05c, Lackawanna, on reinforcing bars shipped direct from steelworks and to get a minimum of 2.40c on lots delivered in Buffalo territory. Inquiry is increasing slowly but building projects on architects' books are not up to usual volume for this season.

Cleveland, Feb. 21.—A number of small inquiries are keeping reinforcing bar interests active. Awards of the past week included a 120-ton hospital addition for Western Reserve university to Bourne-Fuller Co. Several inquiries requiring from 200 to 300 tons are active. New billet bars continue 1.85c, Cleveland or Pittsburgh mill, with rail steel 1.75c, mill. For delivery from jobbers' stocks new billet bars are 2.30c to 2.50c, Cleveland, and 2.60c, Youngstown.

Awards Compared

	Tons
Awards this week	3,625
Awards last week	10,445
Awards two weeks ago	1,160
Awards this week in 1927	1,813
Average weekly awards, Jan.	8,613
Average weekly awards, 1928	6,784
Total awards to date, 1927	30,943
Total awards to date, 1928	47,490

CONTRACTS PLACED

750 tons, Passavant hospital, Chicago, to Concrete Steel Co. George A. Fuller Co., general contractor.
370 tons, Northern Life Insurance building, Seattle, equally divided between Pacific Coast Steel Co. and Northwest Steel Rolling Mills, formerly noted as 300 tons.
300 tons, building, Taylor, S. C., to Connors Steel Co.
250 tons instead of 200 tons as noted last week, Mayview hospital, Pittsburgh, to Carlem Engineering Co.
220 tons, rail steel, apartment building at Wilson avenue and Beacon street, Chicago, to Concrete Engineering Co.
210 tons, office building, Wilshire boulevard, Los Angeles, to unstated company.
200 to 400 tons, new garage for Boston postoffice in Back Bay district, Boston, to Concrete Steel Co.
180 tons, building for First Presbyterian church, Greensboro, N. C., to Truscon Steel Co.
150 tons, warehouse for United Grocers Co., Brooklyn, N. Y., to Igoe Bros.
150 tons, American City Refining Co. building, New Orleans, to Connors Steel Co.
120 tons, pathological hospital for Western Reserve university, Cleveland, to Bourne-Fuller Co.
100 tons, including bus barn for Cleveland Railway Co., Cleveland, to Bourne-Fuller Co.
100 tons, Schoelkopf tannery addition, Buffalo, to Kalman Steel Co.
100 tons, bridge at New Rochelle, N. Y., to Concrete Steel Co., through Willets Construction Co.
100 tons, miscellaneous work including power house at Huntington, W. Va., 60 tons, bars and mesh, to Truscon Steel Co.
100 tons, Griffin Mfg. Co., building, Griffin, Ga., to Connors Steel Co.
100 to 150 tons, culverts for roadbuilding, Alabama, to Connors Steel Co.
100 tons, Dakota Creek bridge. Blaine, Wash., to Northwest Steel Rolling Mills.
100 tons, Washington and Oregon highway projects, to Northwest Steel Rolling Mills.
100 tons, school at Scarsdale, N. Y., to Republic Fireproofing Co.
100 tons, including 75 tons for Central of Georgia railroad structure at Rome, Ga., to Connors Steel Co.
Unstated tonnage, plant for Ohio Box Board Co., Ritman, O., to Truscon Steel Co.

CONTRACTS PENDING

1000 tons, Green industrial building, New York; General contract to Turner Construction Co.
500 tons, Chicago Civic Opera building Chicago;

John Griffith & Son Co., general contractor.
300 tons, Steuben club, Chicago; K. M. Vitzhum & Co. Inc., architects.
300 tons, Atlantic & Pacific Stores Co. warehouse at St. Louis; Austin Co., Chicago, general contractor.
270 tons, Chemistry building and power house unit, Ohio State university, Columbus, O.
250 tons, apartment hotel, 1500 Lake Shore drive, Chicago.
200 tons, three basements, Koppers building, Pittsburgh; bids close March 1.
200 tons, Blum store, Philadelphia; general contract to Wark Co.
200 tons, hospital, Abington, Pa.
200 tons, public school projects, Batavia, N. Y.; Green & Hopkins, Buffalo, architects; bids to be asked soon.
100 tons, Sprague Memorial, Kingston, Pa.
100 tons, Y. M. C. A., Williamsport, Pa.
100 tons, administration building, Boys' Training school, Morganza, Pa.; bids being compiled.
Unstated tonnage, Eleto warehouse, New York; general contract to White Construction Co.

Refractories

Improved Steel Rates and Expansions Prod Refractories Orders

REFRACTORIES PRICES, PAGE 554

Pittsburgh, Feb. 21.—Increased steel mill operations are commencing to be reflected in refractories. Fire clay and silica brick orders have been growing, though consumers are simply taking what they need for repairs, relinings, etc. Shenango Furnace Co. purchased a new lining for its No. 3 stack, recently blown out, from the brick maker which has been furnishing large quantities to Koppers Co. for new construction at New Haven, Conn., Philadelphia and Montreal. The larger part of the contract for brick for Timken Roller Bearing Co. expansion in Canton, O., for open hearths, soaking pits, heating furnaces, etc., has been let. A large order for several hundred thousand silica, fire clay, chrome and magnesite brick for the Otis Steel Co.'s new 100-ton open hearth at Cleveland is to be let soon. Projects to come later include new by-product coke ovens for Pittsburgh Steel Co. Kiln operations average 50 to 60 per cent. Except for intermittent concessions by proverbial price cutters, prices are firm.

Mining Engineers Gather in New York

New York, Feb. 21.—With a large early registration, and a formidable list of papers to be presented, the annual winter's convention of the American Institute of Mining and Metallurgical Engineers opened here yesterday. The importance of steel to the aircraft industry can scarcely be exaggerated according to discussions on this subject. Eight papers on special steel and steel alloys were presented on the first day of the convention. Henry D. Hibbard, consulting engineer, Plainfield, N. J., made the annual Henry M. Howe lecture, his subject being the significance of steel analysis. The registration up to noon on Monday was over 1000 which is nearly 200 more than on any previous occasion.

Rails, Cars

Equipment Buying Lighter but February Total Good—Rail and Accessories Less Active

ACTIVITY in the railroad equipment market of the week included few large orders or inquiries. Union Pacific placed 23 locomotives and 15 extra tenders. Car awards in February already exceed 7000. Bethlehem Steel Co. booked 6000 tons of rails for New York subways. Accessory buying in the Chicago district totaled 5000 to 8000 tons during the week.

RAILROAD TRACK MATERIAL PRICES, PAGE 522

New York, Feb. 21.—While freight car buying has been rather light the past week, total orders so far this month are in excess of 7000, which compares with 3900 for all of January. Locomotive buying is featured by the placing of 23 engines and 15 extra tenders by Union Pacific railroad.

Bethlehem Steel Co. has booked 6000 tons of rails and a substantial quantity of track spikes and screw spikes for New York subways. Rail Joint Co. was successful bidder on a good tonnage of accessories while Dilworth Porter & Co., Pittsburgh, were successful bidders on a substantial quantity of rolled steel tie plates.

Public Service Co. of New Jersey, Newark, N. J., is in the market for a large tonnage of rails and track accessories for its electric railway system.

Pittsburgh, Feb. 21.—Light rail sellers continue to maintain $36, believing a reduction would not inspire additional buying. Demand is satisfied easily with an occasional carload or two. Some large coal mine operators purchase occasionally for split-up delivery.

Track accessory demand is fair. Small orders keep up fairly well from scattered buyers, especially on small spikes. Prices are firm, 2.80c for small spikes with an occasional concession for standard spikes. Tie plates are unchanged at 2.25c.

Philadelphia, Feb. 21.—A fair rail tonnage was placed in this district recently. Philadelphia Rapid Transit Co. ordered 4000 to 5000 tons, composing its year's requirements. Lehigh & New England closed on 1000 tons, and Lehigh Coal & Navigation Co. placed a substantial tonnage of light rails.

Chicago, Feb. 21.—Ordering of standard steel rails in this territory has been light the past two weeks, but about 40,000 to 50,000 tons still are before western mills for 1928 programs. Only small miscellaneous tonnages were placed in the past week. Rail mill operations are above 90 per cent, and mills in this territory will be well occupied with backlogs for some time. Buying of light rails is inactive. Only miscellaneous carloads are ordered.

Definite inquiry for track accessories in this market is 10,000 to 15,000 tons. Roads during the week placed 5000 to 8000 tons of fastenings.

Specifications from car builders continue to come in actively. Minneapolis, St. Paul & Sault Ste. Marie has ordered eight combination baggage and smoking cars from Pullman Car & Mfg. Corp. Chicago, Rock Island & Pacific has put out an inquiry for 11 gas-electric rail motor cars.

CAR ORDERS PLACED

Central Railway of Brazil, 12 passenger cars, to American Car & Foundry Co.
Delaware & Hudson, three combination mail and baggage cars, to American Car & Foundry Co.
Longview, Portland & Northern, 50 logging cars, to own shops at Longview, Wash. Parts and trucks to Magor Car Corp.
Minneapolis, St. Paul & Sault Ste. Marie, eight combination baggage and smoking cars, to Pullman Car & Mfg. Corp.
Union Pacific, 500 flat cars, to Bettendorf Co.; 10 diners and 15 passenger cars, to Pullman Car & Mfg. Corp.
Wheeling Steel Corp., 16 dump cars, to Koppel Industrial Car & Equipment Co.

LOCOMOTIVE ORDERS PLACED

Alabama State Docks, one switch engine, to American Locomotive Co.
American Rolling Mill Co., one oil electric locomotive, to be built jointly by American Locomotive Co., General Electric Co., and Ingersoll-Rand Co.
Donner Steel Co., Buffalo, one oil-electric locomotive, to be built jointly by American Locomotive Co., General Electric Co. and Ingersoll-Rand Co.
Rhodesian railways, 18 locomotives, to North British Locomotive Co., Glasgow.
Russian Imperial Railway commission, 30 industrial locomotives, to George D. Whitcomb Co.; the order consisting of ten 18-ton and twenty 12-ton locomotives.
Union Pacific, 23 3-cylinder locomotives and 15 extra tenders, to American Locomotive Co.

CAR ORDERS PENDING

Chicago, Rock Island & Pacific, 11 gas-electric rail motor cars in addition to previous inquiries.
Minneapolis, St. Paul & Sault Ste. Marie, 200 box cars.
Sinclair Refining Co., five coke cars.
Standard Oil Co. of New Jersey, 12 tank cars for export.
United Fruit Co., 75 box cars, 25 flat cars and three tank cars; inquiry withdrawn.

Lester R. Bachner has been appointed receiver of the Randall Iron Works, Inc., 1230 Randall avenue, New York.

Wire

Heavy Shipments with Prospect for Continued Activity—Prices to Be Tested

SHIPMENTS of wire and nails are heavy, though somewhat less than in January. The new prices have not been applied to much new business and remain to be tested by demand. Present specifications are against previous lower prices. Mill operations are at an increased rate. Jobbers stocks are being called on for larger supplies.

WIRE PRICES, PAGE 522

Chicago, Feb. 21.—Demand for wire products from jobbers has eased somewhat, due largely to heavy shipments to jobbers in January. Carload buyers are active, however. Nails have been affected somewhat by the recent heavy shipments to jobbers, and now are in lighter demand. Less indication of shading prices is seen in the western market. Wire nails are reported steady at $2.70. Bright plain wire is 2.55c, Chicago or western mill.

Worcester, Mass., Feb. 21.—Buying of wire shows steady expansion at steady prices. Orders are increasing, but in limited lots for advanced specifications. Shipments against first quarter business are in good volume and mill stocks are better balanced. New prices will receive a more accurate test in a few weeks. The orders coming cover many specifications for specialties.

New York, Feb. 21.—Specifications on first quarter contracts for steel wire and nails continue active. Substantially all of this is on contracts booked at lower prices. Current prices continue 2.50c, base, Pittsburgh, for plain wire and $2.65, base, for wire nails, but there is little new business to afford a test.

Buffalo, Feb. 21.—Operations of wire mills is at about 80 per cent. Common wire purchases before the recent advance were sufficient to keep schedules up this month and part of March.

Pittsburgh, Feb. 21.—Shipments of wire products are heavily. These apply against contracts booked prior to the last price advance, so that only a few scattered small orders have been taken at the new levels, 2.50c on plain wire and $2.65 on wire nails. Jobbers are moving over stocks more rapidly. Some agricultural districts are commencing to contribute more tonnage. Wire mill operations average 60 to 70 per cent.

Bolts, Nuts, Rivets

Chicago Advances Small Rivets—Demand on Heavy Basis

NUT AND BOLT PRICES, PAGE 522

Chicago, Feb. 21.—Small rivets, 7/16-inch and smaller, have been advanced to 70 per cent off, except in a few instances where 70 and 10 off still is quoted. This is to be effective at once. Bolts continue 70 off and large structural rivets 2.85c, Chicago, for carloads. Specifications for bolts, nuts and rivets are slightly behind shipments in some lines. Farm implement industry, which took heavy shipments the past three months, has eased off slightly, although operations continue at a high rate. Operations of bolt and rivet producers continue at about 70 per cent. Automotive and railroad buying continues active.

New York, Feb. 21.—Oliver Iron & Steel Co., Pittsburgh, was low bidder on over 200 tons of track fastening bolts in bids opened by the New York board of transportation Feb. 11, and was given the contract.

Demand for bolts and nuts, which recently was reported good, is off.

Cleveland, Feb. 21.—Demand for bolts and nuts shows a further expansion, supported by heavier specifications from diversified consumers. Operations have been increased to about 65 per cent, with a leading interest reporting 70 per cent.

Pittsburgh, Feb. 21.—Rivet, nut and bolt orders are growing slightly more numerous, with shipments somewhat over the January rate. Large tonnages are absent in keeping with the continued policy of specifying only what is needed. Prices are firm at 70 off for nuts and bolts, 2.75c for rivets, and 70 and 10 off for small rivets, with an extra 5 per cent on the latter when tonnage warrants.

Strip Steel

Hot Strip Makers at Chicago Name Higher Schedule

STRIP PRICES, PAGE 522

Chicago, Feb. 21.—Producers of hot rolled strip steel are putting into effect higher quotations. These represent an advance of $2 a ton, and in some cases $3. Chicago quotations are: Strip under 3 inches, 2.30c to 2.50c; 3 inches to 6 inches, 2.20c to 2.30c; 6 to 12 inches, 2.00c to 2.10c; 12 to 24 inches, inclusive, 16-gage and heavier, coils or cut lengths, 1.95c minimum plate base or 2.20c, minimum blue annealed sheet base, subject to plate and blue annealed sheet extra cards. These are all on the basis of Chicago district mill quotations. Mills are operating above 80 per cent.

Pittsburgh, Feb. 21.—As far as strip steel producers in this locality are concerned there has been no formal coverage of customers' requirements into April at the old price levels. New quotations as announced last week are firm, and recent inquiries by large tonnage users indicate willingness to pay the increases. Undoubtedly some material is on order books at the old figures which cannot be delivered before April, but these ostensibly are first quarter tonnages. February strip shipments will be slightly ahead of January. Bookings are about 15 per cent greater to date. Cold strips are firm at 3.15c, which means 2.90c for larger quantities.

Cleveland, Feb. 21.—Strip steel specifications are being maintained at the level of the past several weeks, and operations of mills in this district generally average from 90 to 100 per cent. Strength is evidenced in present prices, on the new basis of quoting, inasmuch as numerous large consumers covered in the past week for second quarter needs. Second quarter contracts have equalled or exceeded in tonnage first quarter commitments in almost every instance. The only weakness in this territory has been encountered in the Toledo district. Cold-rolled strip is fairly active with prices steady at 2.90c and 3.15c, Cleveland.

Cold Finished Steel

Good Demand and Specifying Rates Show Improvement

COLD FINISHED PRICES, PAGE 522

Pittsburgh, Feb. 21.—Operations averaging 75 to 80 per cent, good order books, heavy shipments for diversified consuming lines, represent the improved conditions prevailing in cold finished bars. While it is admitted the present buying rate is not as heavy as in January, this is because heavy tonnages requisitioned in that month now are being absorbed. Automotive releases are being made regularly and it is thought these will be sustained in harmony with production schedules of most automobile producers. While larger customers still are receiving goods on 2.20c contracts, current business is at 2.30c, which is firm.

Cleveland, Feb. 21.—Despite the slowness of automobile builders in releasing shipments against first quarter contracts, cold drawn bar business continues at a high rate. Several makers compare favorably their first three weeks bookings in February with all of January. The market at 2.35c, Cleveland, appears firm. Several instances where buyers have broadcast inquiries in an effort to break the market have resulted in all makers maintaining the full price.

Nonferrous Metals

Prices Are Weak Throughout List with New Business Still Slow to Develop—Shipments on Orders Placed Continue Large

Prices of the Week, Cents a Pound

	Copper			Straits Tin							
	Electro delivered	Lake delivered	Casting refinery	New York Spot	April	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
Feb. 15	14.12½	14.25	13.75	51.30	51.20	6.35	6.12½	5.57½	23.90	11.00	35.00
Feb. 16	14.10	14.25	13.75	51.75	51.62½	6.35	6.12½	5.55	23.90	11.00	35.00
Feb. 17	14.10	14.25	13.75	51.87½	51.62½	6.32½	6.10	5.52½	23.90	11.00	35.00
Feb. 20	14.07½	14.25	13.75	51.50	51.25	6.25	6.00	5.50	23.90	10.87½	35.00
Feb. 21	14.07½	14.25	13.75	51.37½	51.12½	6.25	6.00	5.45	23.90	10.75	35.00

NEW YORK, Feb. 21.—Prices of several nonferrous metals continue to weaken with new business slower in developing than had been expected. Yet shipments of nearly all metals and products on orders placed two to three months ago continue large. Aluminum and nickel prices are unchanged, and copper continues to hold well though easy, while lead, zinc and tin quotations have fallen in the past week.

Copper—Prices have been at a range of 14.00c to 14.12½c, Connecticut, the higher figure representing the asking price of most producers, while a few are in between, and a little metal might be had at the lower figure. None of these prices represents much business since a little buying was done at the higher price about a week ago. Export business has been light and the price unchanged at 14.50c c.i.f. European port. The various classes of products are taking good amount of copper except in the case of wire. The latter remains light. Product prices are unchanged.

Tin—Prices have continued to fluctuate rapidly and though there was some appearance of firmness a few days ago, easiness reappeared. The break in the stock market was a factor in the latter turn. Also there was lack of buying support, though a few days ago the amount of business with consumers was fair. A strengthening factor in this business was increased interest in nearby metal, so that the February statistics now are expected to look less adverse to sellers than had been expected. The market continues perplexing, with the price lower than generally had been expected.

Zinc—Prime western business remains slow and the price is weak. It had been thought that business would become more active and the price firmer when 5.50c, East St. Louis, was reached, but that did not seem to be the case, as prompt metal quickly became available under this figure. High grade is unchanged.

Lead—The New York price has gone down 10 points, making ¼-cent in less than two weeks. The East St. Louis price in the past week has dropped ⅛-cent. Business in this country is good, though confined to prompt buying on account of weakness. The downward course of prices abroad is forcing the market here down.

Aluminum—Prices are steady with a fair amount of business for early shipment being done.

Federal specifications board has formulated a master specification for insulated safes and cabinets, which is being submitted to manufacturers for comment and criticism before final adoption.

Mill Products

Base prices cents per pound f.o.b. mill

SHEETS	
Yellow brass (high)	18.75
Copper, hot rolled	22.75
Lead, full sheets (cut ¼c more)	10.00
Zinc (100-pound base)	10.00
Aluminum, flat sheets, up to 10 gage, 3" to 72" wide	31.50
SEAMLESS TUBES	
Yellow brass (high)	23.62½
Copper	24.50
RODS	
Yellow brass (high, free turning)	16.50
Naval brass	19.25
WIRE	
Copper, small lots	15.62½
Yellow brass (high)	19.25

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	9.25 to 9.50
Chicago	9.25 to 9.50
Cleveland	9.50 to 10.00
HEAVY YELLOW BRASS	
Chicago	7.50
Cleveland	7.25 to 7.50
ZINC	
New York	3.50
Cleveland	3.25
HEAVY COPPER AND WIRE	
New York	11.50 to 11.75
Boston	10.75 to 11.25
Chicago	10.50 to 11.00
Cleveland	11.50 to 11.75
RED BRASS BORINGS	
New York	8.25 to 8.50
YELLOW BRASS TUBING	
Cleveland	7.50
LIGHT COPPER	
New York	10.00 to 10.25
Chicago	10.00
Cleveland	10.00 to 10.25
LIGHT BRASS	
Boston	6.00 to 6.50
Chicago	6.50
Cleveland	5.50 to 5.75
ALUMINUM	
Clippings, Cleveland	17.50
Borings, Cleveland	9.50
Cast, Cleveland	13.00
Cast, Boston	12.00 to 12.50

Secondary Metals

Remelt Aluminum No. 12	17.00 to 17.50
Brass ingot, 85-5-5-5	12.25 to 12.50

Coke By-Products

Brisk Toluol Demand Reflects Automotive Activity

New York, Feb. 21.—Toluol demand, featuring light oil distillates, is the most active in weeks. Prices, however, continue unchanged. Increased demand for toluol is attributed largely to improved automotive production. Pure and 90 per cent benzols are unchanged. Increasing spot demand is providing sulphate of ammonia with greater strength, the market now holding at $2.35, delivered. Sellers continue to book small business for Porto Rico, British West Indies and Japan at $2.20 to $2.25, port, for material in double bags for shipment in May and June. Leading sellers are refusing to book export business much before that time. Spring buying of naphthalene continues fairly brisk.

Coke Oven By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot	Contracts
Pure benzol	$0.23	.....
90 per cent benzol	0.23	.....
Toluol	0.35	.....
Solvent naphtha	0.30 to 0.35	.....
Commercial xylol	0.36	.....
Phenol	0.19 to 0.20	.....

Per Pound at Producers' Plants

Naphthalene flakes	0.05 to 0.05½
Naphthalene balls	0.06 to 0.06½

Per 100 Pounds Delivered

Sulphate of ammonia	$2.35

Chicago Iron Rate Stands

Washington, Feb. 21.—The rate on pig iron, in carloads, from certain points in the Chicago district to Benton Harbor, St. Joseph, and Bridgeman, Mich., has not been found unreasonable or otherwise unlawful by the interstate commerce commission.

Quicksilver Is Steady

New York, Feb. 21.—Quicksilver is steady at $122 to $123. Business is moderate.

Warehouse

Sales Volume Maintaining January Level With Some Increases—Mill-Jobber Competition Keener at Buffalo—Prices Firming

IRON and steel warehouse sales thus far in February compare favorably with January this date, being slightly ahead in numerous cases. Temporary break in the improvement was noted at Pittsburgh last week. Mills are offering jobbers stiffer competition at Buffalo for small lots. Prices continue the upward trend.

Trading in the New York metropolitan warehouse market is at a rate slightly in excess of last month but in view of the two holidays and the fact that February is a short month, jobbers believe the showing for this month will be about the same as last. Prices are steady, reflecting a strong tone at the mills.

Warehouse sales of iron and steel at Buffalo are about keeping pace with bookings to the corresponding date of 1927. Steelworks are seeking small tonnages and are giving unusual competition to the warehouses. Warehouse prices have undergone no change although mills have higher quotations, in part offsetting exceptionally keen competition.

Pittsburgh jobbers report a slight interruption last week of improvement in demand since the first of the year for various steel products, especially heavier rolled lines. This may be but a temporary letup and even with it the tonnage this month is slightly ahead of January to the same date. Sheet prices are firm on the basis of the January advance, and it is intimated cold finished bars will shortly be increased. Track bolts are stronger at 60 off instead of 62½.

Cleveland district jobbers are accumulating better order books than in January, sales increases ranging up to 30 per cent over the past month and February, 1927. Small fabricators still are lagging in demand and sheet metal and tin shops have ordered spring requirements, taking these buyers out of the market temporarily. An increase of sales from week to week is reported due to widespread nature of buying and large number of orders being placed.

St. Louis warehousemen report continued improvement in business, with good prospects for the next few weeks. Prices are firm and anticipating possible advances, certain customers show a disposition to cover on future requirements.

Several jobbers in the Philadelphia district who had been hesitant now have followed the course of others and all warehouses are charging quantity differentials on steel bars, based on 2.40c, delivered locally, for 1-ton or more. These quantity differentials now are spreading to out-of-town points so that local jobbers are obtaining these differentials on a substantial portion of outside sales.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

STEEL BARS

Baltimore	2.60c to 3.31c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Ft. Worth	3.75c
Houston	3.00c
Los Angeles	3.40c
New York	3.24c
Philadelphia	2.40c to 2.90c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.75c to 4.06c

IRON BARS

Baltimore	2.60c to 3.31c
Boston	3.265c
Buffalo	3.30c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
Ft. Worth	3.75c
New York	2.80c to 3.24c
Philadelphia	2.40c to 2.90c
St. Louis	3.15c
Tulsa	3.75c to 4.06c

REINFORCING BARS

Baltimore	2.60c to 3.31c
Boston	3.265c to 3.50c
Buffalo	2.75c
Cincinnati	3.15c
Cleveland	2.20c
Detroit	3.00c
Ft. Worth	3.50c
Houston	3.00c
*Los Angeles	3.05c
**Los Angeles	3.30c
New York	2.95c
Philadelphia	2.30c to 2.80c
Pittsburgh	2.90c to 3.175c
*San Francisco	2.85c
**San Francisco	3.10c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.75c to 4.00c
Youngstown	2.30c to 2.60c

*Carload. **Less carload.

STRUCTURAL SHAPES

Baltimore	2.60c to 3.41c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Ft. Worth	4.25c
Houston	3.25c
Los Angeles	3.40c
New York	3.34c
Philadelphia	2.40c to 2.80c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

PLATES

Baltimore	2.60c to 3.41c
Boston	3.365c
Buffalo	3.40c
Chicago	3.10c
Cincinnati	3.40c
Cleveland, ¼-in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.30c
Ft. Worth	4.00c
Houston	3.00c
Los Angeles	3.40c
New York (sheared and universal)	3.34c
New York (floor)	5.25c
Philadelphia	2.40c to 2.80c
Phila., 3/16-in.	2.60c to 3.00c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.15c
Seattle	3.00c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c to 4.16c

No. 10 BLUE ANNEALED SHEETS

Baltimore	3.10c to 3.66c
Boston, 3/16-in.	3.915c
Buffalo	3.70c
Chicago	3.50c
Cincinnati	3.60c
Cleveland	3.25c
Detroit	3.50c
Ft. Worth	4.70c
Houston	3.90c
Los Angeles	3.85c
New York	3.79c to 3.89c
Portland	4.00c
Philadelphia	3.15c
*Pittsburgh	3.10c
San Francisco	3.75c
Seattle	4.00c
St. Louis	3.60c
St. Paul	3.75c
Tulsa	4.30c to 4.56c

*Price on 25 or more sheets.

No. 24 BLACK SHEETS

Baltimore	3.60c to 4.30c
Boston	5.00c
Buffalo	4.20c
Chicago	3.95c
Cincinnati	4.05c
Cleveland	3.75c
Detroit	4.10c
Ft. Worth	4.70c
Los Angeles	5.10c
New York	4.10c
Philadelphia	4.15c
Pittsburgh†	3.75c
Portland	4.90c
San Francisco	4.95c
Seattle	5.00c
St. Louis	4.45c
St. Paul	3.95c
Tulsa	4.75c

†Price on 10 to 24 bundles.

No 24 GALVANIZED SHEETS

Baltimore	4.30c to 5.45c
Boston	5.85c
Buffalo	5.05c
Chicago	4.80c
Cincinnati	4.90c
Cleveland	4.60c
Detroit	4.90c
Ft. Worth	5.75c
Houston	5.30c
Los Angeles	5.30c
New York	4.70c
Philadelphia	5.00c
Pittsburgh†	4.60c
Portland	5.65c
San Francisco	5.50c
Seattle	5.75c
St. Louis	5.25c
St. Paul	4.90c
Tulsa	5.55c

†Price on 10 to 24 bundles.

BANDS

Baltimore	3.25c to 4.06c
Boston	4.015c
Buffalo	4.05c
Chicago	3.65c
Cincinnati	3.95c
Cleveland	3.65c
Detroit	3.65c
Ft. Worth	4.40c
Houston	3.65c
Los Angeles	4.25c
New York	3.99c
Philadelphia	3.25c
Pittsburgh	3.60c
Portland	4.00c
San Francisco	4.00c
Seattle	4.00c
St. Paul	3.90c
Tulsa	4.71c

HOOPS

Baltimore	4.16c
Boston	5.50c
Buffalo	4.05c
Chicago	4.15c
Cincinnati	4.40c
Cleveland	3.65c
Detroit	4.15c
New York	4.49c
Philadelphia	3.50c
Pittsburgh	4.50c
Seattle	5.00c
St. Paul	4.40c

COLD FINISHED STEEL

	Rounds, hexagons	Flats squares
Baltimore	3.25c	3.75c
Boston	3.45c	3.95c
Buffalo	3.95c	4.45c
Chicago	3.60c	4.10c
Cincinnati	3.85c	4.35c
Cleveland	3.65c	4.15c
Detroit	3.85c	4.35c
Los Angeles	5.25c*	.....
New York	3.40c	3.90c
Philadelphia	3.35c	3.85c
Pittsburgh	3.60c	4.10c
Portland	5.00c*	.....
San Francisco	4.25c*	.....
Seattle	5.00c*	.....
St. Paul	3.85c	.....
Tulsa	4.66c	5.16c

*Rounds only.

COLD ROLLED STRIP

Boston, 0.100-inch, 500-lb. lots	6.00c
Buffalo	5.85c
Chicago*	6.10c
Cincinnati	7.15c
Cleveland*	5.95c
Detroit	5.80c
New York	5.15c
Philadelphia	5.00c†

*Net base, straightening, cutting, boxing one ton or more.

†Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid	
Hollow drill steel	14.00c
Iron bars, rounds	6.25c
Flats and Squares	
Baltimore, New York, Phila.	6.60c

Coast Buying Moderate

Large Structural Tonnage Sold—Some Products Moving at Better Rate Than Year Ago

SAN FRANCISCO, Feb. 16.—(*By Air Mail*)—The largest structural shape award placed on the coast so far this year has just been booked by the McClintic-Marshall Co., Central Works—6500 tons for the Physicians building in San Francisco. Demand in many lines is holding well and a number of projects are pending which will require over 30,000 tons of plates and shapes.

Pig Iron and Coke

Little of importance has developed in foundry pig iron and coke, sales and inquiries being limited to unimportant, prompt tonnages. Prices continue unchanged.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	24.00 to 25.00
*Dutch	24.50

*C.i.f. duty paid.

Bars, Plates and Shapes

Concrete bar awards aggregated less than 300 tons, the largest calling for 210 tons for an office building at Seventh street and Wilshire boulevard, Los Angeles, placed with an unstated interest. To date this year 14,124 tons have been booked, compared with 8880 tons last year. Pending business exceeds 13,000 tons.

Plate awards so far this year total 2325 tons, compared with 6890 tons in 1927. Considerable new work is in sight or up for figures. The Southern California Edison Co., Los Angeles, has taken bids on a 1300-ton penstock. Bids will be opened next week on 650 tons for a penstock and pipe line at Milton, Oreg. Bids have been opened on 100 tons of riveted pipe for the East Palo Alto waterworks district at Redwood City, Calif. Total pending business exceeds 10,000 tons. Prices are firm at 2.30c c.i.f.

Awards of structural shapes this week totaled 8899 tons, bringing the aggregate for the first seven weeks of the year to 23,976 tons, compared with 36,860 tons for the same period last year. In addition to the 6500-ton Physicians building award, the Pacific Coast Steel Co. booked 700 tons for a transmission line for the Southern California Edison Co. at Los Angeles and McClintic-Marshall Co. took 850 tons for a synagogue in the same city. Pending business calls for over 21,000 tons. Plain material is firm at 2.35c c.i.f.

Only one cast iron pipe project involving over 100 tons was reported placed. So far this year awards total 9804 tons, compared with 15,550 tons for the corresponding period in 1927. B. Nicoll & Co. was low bidder on 1964 tons for Los Angeles. Pending business now totals well over 9000 tons. New inquiries include 526 tons for Redwood City and 426 tons for Huntington Park. The only award of standard pipe noted this week went to Grinnell Co. and called for 1235 tons of welded steel pipe for Los Angeles.

Pending Tonnage

In Northwest Promises Active Season Shortly

SEATTLE, Feb. 15.—General business conditions in the Pacific Northwest are satisfactory. While awards of iron and steel have not been heavy since Jan. 1, an unusual volume of business is up for figures or assuming definite shape.

Intercoastal steamship lines are making every effort to maintain westbound conference freight rates in which steel is a prominent factor. Recently, however, non-conference lines have been offering space at 10 to 20 per cent under conference levels.

Pig Iron and Coke

The foundry industry is waiting for spring work to open. Plants are generally well stocked and buying is restricted to small tonnages. Columbia No. 1 iron is $26.50 f.o.b. plant, but there is little interest in imported iron.

Bars, Plates and Shapes

The market is steady with bars and shapes unchanged at 2.35c, while plates are firmer at 2.30c against a recent level of 2.25c. While buying is not heavy the better tone of eastern markets and less competition from imported materials are stabilizing the local situation.

Awards of reinforcing materials this week totaled approximately 250 tons. Northwest Steel Rolling Mills was awarded 100 tons for the Dakota Creek bridge near Blaine, Wash. Scherer & Carlson at $239,993 were awarded the general contract for Seattle fire department headquarters, including 190 tons of reinforcing, which has not been placed.

Poole & McGonigle, Portland, have been awarded 235 tons of structurals for the 280-foot Wind river bridge, Skamania county. The only other award this week, 100 tons, went to Wallace Bridge & Structural Steel Co. for steel girders for a crane runaway for the Pacific Coast Steel Co.

No new inquiries for plates developed this week, the largest tonnage up for figures being 2050 tons for a pipe line for Seattle, bids to be opened this week. An unstated tonnage is pending at Vancouver, B. C., where general contracts have been awarded for steel pipe.

Lewiston, Idaho, will open bids Feb. 28 on 3500 feet of cast iron pipe and gate valves.

Old Materials

Steel scrap is unchanged at $10 and $11 gross, according to grade. Local mills are receiving ample supplies. Cast iron scrap is weak as foundries are not buying in volume. Average price remains $13, net, although some sales in carload lots have been made as low as $12, net.

Inspect Chicago Plants

New York, Feb. 21.—Following their inspection of United States Steel Corp. subsidiary plants in the Birmingham district, James A. Farrell, president, and Myron C. Taylor, chairman of the finance committee, have visited Corporation plants in the Chicago district.

Fencemakers To Merge

Mid-States Steel Co., with a capital of $3,100,000, is to be incorporated in Indiana to acquire the Crawfordsville Wire & Nail Co., Crawfordsville, Ind., Adrian Wire Fence Co., Adrian, Mich., and Dwiggins Wire Fence Co., Anderson, Ind., provided stockholders approve. The first stockholders' meeting is scheduled for Feb. 27.

Alan Wood Mill Rebuilt

The Alan Wood Iron & Steel Co. has placed in operation its north mill at Conshohocken, Pa., which has been entirely rebuilt. Its equipment is of the latest type and is driven electrically. Alan Wood Iron & Steel Co. now has practically completed the program of modernizing all departments of its plant.

Tube Capacity Increased

Pittsburgh, Feb. 21.—In connection with the recent offering of $11,000,000 in 20-year 6 per cent sinking fund debenture gold bonds, Homer D. Williams, president of the Pittsburgh Steel Co., points out that the ingot capacity of the company now is 650,000 tons and its facilities for making seamless tube products 270,000 tons. In 1927 a new unit of 150,000 tons capacity for producing seamless tubes up to 13⅜ inches was completed.

Sheet Mills Merged

Unified Control By Empire Steel Corp. March 1.

Cleveland, Feb. 21.—Formal merging of the Mansfield, Ashtabula, Empire, Falcon, Waddell and Thomas sheet mills into the Empire Steel Corp. was effected today at a meeting of officers and directors. Unified control of the six plants is scheduled for March 1.

In addition to W. H. Davey, who is president, the following officers have been chosen: Vice president, J. D. Waddell, former president of the Waddell company; treasurer, W. R. Jenkins, former secretary of the Mansfield company; secretary and director of purchases, A. I. Davey, former first vice president of the Mansfield company; and general manager, Samuel Davey, former second vice president and general manager of the Mansfield company.

On the executive committee are Harry Pickands, Pickands, Mather & Co., Cleveland; W. A. Thomas, former president, Brier Hill Steel Co., and Messrs. Waddell, Jenkins and W. H. Davey. Finances will be directed by special committee including C. S. Thomas, former chairman of the Thomas company, W. H. Davey, Samuel Davey, Paul Wick, and A. H. Wheatley.

Executive and sales headquarters will be at Mansfield. Branch offices will be at Detroit, Cleveland, New York, Philadelphia, and Chicago.

Products of the six mills will embrace all grades of steel sheets with the single exception of galvanized. This deficiency will be supplied during the year by converting one of the mills into a complete, modern plant equipped to produce all gages and grades of galvanized sheets. In a general way, the mills will specialize on specialties such as auto body, furniture, electrical and blue annealed sheets, the allocations being made in accordance with proximity of the plants to the markets they serve.

Will Vote on Sheet & Tube Merger March 15

Youngstown, O., Feb. 21.—A special meeting of stockholders of Youngstown Sheet & Tube Co. has been called by President Campbell for March 15 at Youngstown to take action on the proposed merger with Inland Steel Co. The latter indicates Youngstown is purchasing Inland for a consideration of 1,200,000 shares of common stock of the Youngstown company. The latter states that it is proposed to change the name of the consolidated companies to Youngstown Inland Steel Co. Another proposal is stated as follows:

(a) Increase the common stock without par value by (1) Changing the presently authorized 1,000,000 shares 2,000,000 shares so that the holders thereof shall be entitled to two shares in place of every one as now authorized, and (2) authorizing an additional 1,200,000 shares, or such other amount as may be determined at the meeting.

Stockholders of the Trumbull Steel Co. have formally authorized sale of the company to Republic Iron & Steel Co., although suit is threatened by some to stay distribution of the shares received from Republic until a protest against the proposed distribution is settled.

Pig Iron Prices Firmer

(*Concluded from Page* 523)

$17, base, Cleveland, and $16, base, Birmingham, respectively. Jackson county silvery iron is steady at $25, base, furnace, for 8 per cent. It is reported that the Marting Iron & Steel Co. at Ironton will blow in a furnace in March.

Philadelphia, Feb. 21.—A new factor in the pig iron market here is the appearance of Buffalo competition on a new basis. A round tonnage of Buffalo foundry iron was sold in the past week to eastern Pennsylvania consumers for barge shipment from Buffalo to Albany to be trans-shipped there to ocean going barges which will take the iron the rest of the way to Delaware river terminals, where the iron will be shipped the remainder of the way by rail. The all-barge rate, Buffalo to Philadelphia and other Delaware river points is $3 to $3.25, with Buffalo No. 2 plain iron $16.25, furnace, the Delaware river delivered price is $19.25 to $19.50. Rail rates from Philadelphia to eastern Pennsylvania consuming points range from $1.01 to $1.64. By this combination Buffalo furnaces can deliver iron in eastern Pennsylvania under the price delivered from eastern Pennsylvania furnaces. The iron was sold for delivery after opening of navigation. A number of small sales are noted in the market. Eastern Pennsylvania foundry iron is firm at $20, base, furnace. A steelmaker bought 4000 to 5000 tons of basic, and several steel foundries increased their tonnages of low phosphorus iron for first quarter because of larger orders for castings.

Chicago, Feb. 21.—Close to 150,000 tons of pig iron has been sold for second quarter in the Chicago-Milwaukee district and in Michigan. Interest is active for the second period, although buying is done usually without formal inquiry. Several heavy tonnages of foundry iron were placed as well as an important basic tonnage. Stiffening in the market at Granite City, Ill., has strengthened the market to the west of the Chicago district, but in Michigan, Chicago sellers meet Toledo and Cleveland competition. Shipments are said to be the best of any in 14 to 15 months. The base price of $18.50, Chicago furnace, appears slightly firmer.

St. Louis, Feb. 21.—Pig iron sales totaled about 12,000 tons in the past week. While specifications are not as heavy as might be desired the outlook is hopeful. A number of the smaller melters have come into the market and generally there is less resistance to price. The St. Louis Gas & Coke Corp. booked 11,000 tons. The largest single sale was several thousand tons to an Illinois radiator manufacturer. A local wheelmaker took 1000 tons, job foundries 1200 tons, stove plants 950 tons and implement makers 400 tons. Prices are fairly firm.

Operators Discuss Blast Furnace Problems

(*Concluded from Page* 512)

ing of fine ores to obtain a more open structure of the stock in the furnace. Later in the discussion a test was cited where a stack operated for a period of weeks with unscreened sinter in the burden with a daily average output of 468 tons of iron. The charging of the unscreened sinter then was discontinued and screened sinter substituted in the burden. The stack immediately responded to the change, the daily average output increasing to 530 tons without any increment in the volume or temperature of the blast. In another case where a furnace is operated on 100 per cent sintered ores and with a blast temperature of 1400 degrees Fahr. the stoves have required no cleaning since the present campaign started over a year ago.

The relation between the size of large bell and stock line diameter and its bearing on flue dust losses, brought out many interesting sidelights. One speaker explained that American operators years ago changed from small to large bells in hope of getting longer furnace life. Better distribution was obtained but the amount of flue dust blown over into the dust catcher increased appreciably. Within the past few years, considerable attention has been given towards the reduction of flue dust losses, culminating in the return to the smaller bell at certain stacks in the Birmingham district. The speaker emphasized that when a small bell is substituted for a bell of larger diameter, the stock line automatically is enlarged with the result that the gas velocity at the top of the stack is reduced which in turn permits less flue dust to be blown into the dust catcher.

Whether the small bell can be used successfully on northern furnaces is

a much mooted question. Some operators believe the fine ores, which to a large extent make up the burden of stacks in the north, will prohibit double cone filling; others are of the opinion that the small bell can be satisfactorily employed, provided the linings are water-cooled. One stack in the South using hard ore is said to have decreased the volume of flue dust from about 500 to 53 pounds per ton of iron by employing a small bell, enlarging the stock line and making other changes in design. It was mentioned, however, that other furnaces in certain districts of the South are averaging 126 pounds of flue dust per ton of iron without resorting to the small bell.

Following dinner in the evening, C. R. Meissner, president of the association, introduced F. H. Willcox, vice president, Freyn Engineering Co., Chicago, who presented a paper entitled "Blast Furnace Practice in Europe."

Galvanized Pails, Tubs at Year's Low

Washington, Feb. 21.—Production of galvanized pails and tubs was the lowest in December it has been since June, 1926, according to the department of commerce. Following are monthly comparisons:

	PAILS, TUBS, OTHER WARE (In dozens)			
1926	Production	Shipments	Production	Shipments
Dec.	118,525	101,356	31,393	22,025
Total 1926	1,429,909	1,425,672	536,103	519,492
1927				
Jan.	131,006	141,817	31,019	32,082
Feb.	138,788	165,707	39,018	36,123
Mar.	202,393	182,692	32,942	30,980
Apr.	183,812	198,711	30,423	33,785
May	159,178	133,387	33,011	29,900
June	110,909	119,724	48,849	46,357
July	124,264	128,816	30,712	31,832
Aug.	133,309	148,148	44,632	48,291
Sept.	127,608	127,530	37,776	44,852
Oct.	151,495	141,101	39,006	41,368
Nov.	112,690	110,275	35,602	28,578
Dec.	93,273	90,254	22,090	17,013
Total (year)..	1,668,725	1,688,162	425,080	421,161

Electrical Orders Gain

Washington, Feb. 21.—New orders for electrical goods in the fourth quarter gained slightly over the third quarter, according to the department of commerce. Comparisons follow:

	1st quarter	2nd quarter	3rd quarter	4th quarter	Total
1922	$143,320,433	$165,370,750	$167,984,466	$192,473,402	$ 669,149,071
1923	225,399,383	240,542,824	201,910,099	218,165,415	886,017,721
1924	228,760,838	221,167,876	185,747,314	231,470,552	867,146,580
1925	233,023,182	227,502,652	232,933,532	244,597,050	938,056,416
1926	262,677,736	248,000,075	241,114,209	260,078,082	1,011,870,102
1927*	243,651,415	236,427,121	235,557,857	239,247,023	954,883,416

*Revised.

Shape Orders Decline in January

Washington, Feb. 21.—Computed tonnage of structural shape orders in January totaled 213,750, a drop from December, department of commerce statistics show. Monthly comparisons follow:

	Actual tonnage	Per cent of capacity	Computed tonnage	Shipments computed
Total 1926	.....	67	2,553,540	2,842,920
1927				
Jan.	155,978	54	171,720	174,900
Feb.	197,445	69	219,420	181,260
Mar.	186,388	66	209,880	200,340
Apr.	211,247	75	238,500	209,880
May	185,407	65	206,700	213,060
June	181,296	64	203,520	232,140
July	274,274	98	311,640	232,140
Aug	218,181	78	248,040	260,760
Sept.	208,242	76	241,680	248,040
Oct.	229,033	83	263,940	232,140
Nov.	180,483	67	213,060	219,420
Dec.	205,165	75	238,500	225,780
Total	.....	72	2,750,700	2,626,680
1928				
*Jan.	165,017	57	213,750	210,000

*Reported by 195 firms with a capacity of 291,290 tons.

Babbitt Metal Rises

Washington, Feb. 21.—Total apparent consumption of babbitt metal in January made a good gain over December, according to department of commerce figures:

	Total apparent consumption	Sold by manufacturers	Consumption by producers
	(Figures given in pounds)		
1927			
January	5,439,689	4,219,998	1,219,691
February	5,452,200	4,385,951	1,066,249
March	5,626,400	4,418,409	1,207,991
April	4,812,045	3,862,005	950,040
May	4,945,705	3,975,104	970,601
June	4,854,653	4,024,810	829,843
July	4,604,786	3,162,325	1,442,161
August	5,496,659	4,488,895	1,007,764
September	4,792,367	4,116,525	675,842
October	5,115,598	3,860,239	1,255,359
November	4,505,954	3,320,205	1,185,749
December	4,465,787	3,169,493	1,296,294
Total, 1927	60,111,843	47,003,959	13,107,884
1928			
January	4,928,517	4,034,352	894,165

Enameled Ware Is Up

Washington, Feb. 21.—Shipments of enameled sheet metal ware in December totaled 307,280 dozens, making a fair gain over November, department of commerce statistics show. Monthly comparisons follow:

	In dozens			
1927	Total	White	Grey	Colored
January	350,748	197,278	140,267	13,203
February	**372,452**	**202,633**	**150,634**	**19,185**
March	440,689	240,885	172,673	27,131
April	337,181	175,187	143,257	18,737
May	**318,071**	**158,058**	**140,210**	**19,803**
June	292,048	142,004	135,027	15,017
July	248,599	121,754	113,401	13,444
August	329,843	176,772	134,737	18,334
September	310,823	172,241	114,669	23,913
October	*322,081	*169,351	126,344	26,386
November	*287,115	*153,283	106,104	27,728
December	307,280	161,922	119,885	25,473
Tot., 1927..	3,916,930	2,071,368	1,597,208	248,354

*Revised.

American Can Co. plant at New Castle, Pa., will begin working nights March 1, the first time in its history, daytime operations sufficing only to meet demand for immediate shipment.

Stoker Sales Decline

Washington, Feb. 21.—Sale of mechanical stokers in January dropped slightly from December, according to the department of commerce. Comparisons follow:

	Stokers sold	Fire tube boilers	Water tube boilers
1926 total	1,361	289	1,072
January, 1927	69	18	51
February	105	27	78
March	115	25	90
April	77	22	55
May	97	16	81
June	153	49	104
July	136	42	94
August	160	60	100
September	104	48	56
October	95	37	58
November	67	26	41
December	83	29	54
1927 total	1,261	399	862
1928			
January	75	20	55

January Steel Barrel Output Gains

Washington, Feb. 21.—Steel barrel production in January made a slight gain over December, department of commerce statistics show. Members of the Steel Barrel Manufacturers' association, Cleveland, report 298,480 barrels shipped in January, with unfilled orders of 354,552 barrels. The volume of business in January was $927,751.93. I. C. C. barrels were produced at 21 per cent of capacity, light barrels at 51 per cent and all barrels at 45 per cent. Monthly comparisons follow:

			Unfilled orders for delivery	
	Pro-	Ship-	within	beyond
1927				
Jan.	529,137	525,518	244,108	1,544,086
Feb.	504,134	503,183	252,012	1,411,760
Mar	575,850	568,821	285,802	1,260,278
Apr.	599,771	609,090	296,395	1,069,160
May	588,077	575,712	250,029	947,865
June	594,782	605,123	232,468	966,371
July	578,223	576,602	308,789	1,037,899
Aug.	615,152	610,454	244,518	862,086
Sept.	521,899	525,374	235,181	889,256
Oct.	578,408	572,893	211,665	788,894
Nov.	500,909	497,345	182,065	633,724
Dec.	444,227	454,638	221,897	1,086,468
1928				
Jan.	475,906	474,159	241,145	1,110,652

Cement Betters 1927 Gait

Production of portland cement in January totaled 9,782,000 barrels, compared with 8,258,000 barrels last January and 11,999,000 barrels last December. January shipments totaled 6,531,000 barrels, against 5,968,000 barrels in January, 1927, and 6,200,000 barrels in December. Stocks at the end of January amounted to 25,193,000 barrels, with 21,942,000 at the close of December, according to the federal bureau of mines.

Steel Treaters Go To Montreal

American Society for Steel Treating Conducts Its First Semiannual Meeting in Montreal—Attendance Large

Fourteen Technical Papers Are Presented at Five Sessions—Visitors Are Conducted Through Four Plants

MEETING for the first time out of the United States, the American Society for Steel Treating conducted its semi-annual meeting at Mount Royal hotel, Montreal, Que., Feb. 16-17, with an attendance of approximately 250. Fourteen technical papers of high merit were presented at the five sessions, and while the subjects were well diversified, it was interesting to note that metallurgical study and heat treating as applied to the railroads were given more prominent attention than ever before.

At a meeting of the board of directors, it was reported that in 1927 the society had an excess of income over expenditures amounting to $50,300, bringing the total net worth of the organization to $166,000. Decision was reached to publish in book form before Oct. 1, 1928, the *Handbook* which the society now is issuing in loose-leaf form. Secretary W. H. Eisenman reported good progress for the Western Metal congress and Western States Metal and Machine Tool exposition to be held in Los Angeles, Jan. 14-18. He also stated that 75 per cent of the exhibitors at the 1927 exposition had reserved space for the Philadelphia show, Oct. 8-12.

The board referred to the constitution and by-laws committee a proposal which it had received suggesting a change in the name of the organization to one more descriptive of its purpose. Comment favors such change. Dr. W. H. Hatfield, Brown-Firth Laboratory, Sheffield, England, will be the Campbell Memorial lecturer at Philadelphia.

Sample Preparation Shows Crystal Structure

SOMEWHAT new and interesting discoveries in crystal micrography were presented in a paper prepared by R. G. Guthrie, Peoples Gas Light & Coke Co., Chicago, and J. Fletcher Harper, Allis-Chalmers Mfg. Co., Milwaukee. The authors believed that the uniformity of results, that is, photomicrographs of like materials appearing alike, is due principally to the fact that all present methods of preparation have one common result, irrespective of various refinements, and that is that samples arrive before etching with a surface condition commonly known as the "amorphous film," which hereafter will be designated as the "plane film." In the last two years, the more or less standard method of preparation was progressively shortened from nine to four operations with a considerable decrease in the magnitude of the plane film. The uneven solubility of this film, however, was not lessened. It then became apparent that if the true structure of metals was to be seen that a new method of preparation designed to eliminate this film before etching was necessary.

Accordingly the authors devised a method with which it is possible to obtain an optically plane surface, but without this plane film. The authors did not divulge the method used. It was believed that the entire structure comprising a so-called grain was made up of crystals, which could be resolved and photographed providing the plane film could be removed before etching without distortion of the adjacent structure. A number of photomicrographs, including those of Figs. 1 to 3, were shown which proved that the crystal formation was present and grain boundaries were easily distinguishable. It was considered that a grain is an area in which the orientation of its individual crystals or aggregate is approximately the same, but different than adjacent areas of crystals due to allotromorphism.

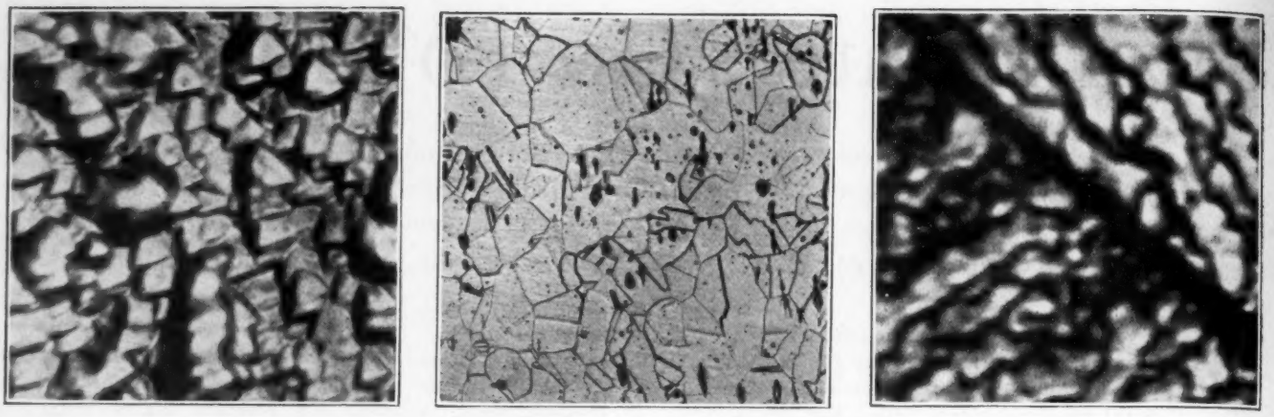
Find No Amorphous Cement

The authors defined crystals to be a micro macroscopic configuration of the atomic space lattice of the individual constituent; the visual magnitude of which is dependent upon the resolving power of an objective and the preparation of its crystal surface. The various structures, namely, ferrite, austenite, cementite, pearlite and martensite were discussed in the light of the experiments conducted. Then was considered the effect of elastic deformation, mechanics of cold work, electrical conductivity and tests of iron and steel at temperatures. The authors stated that in none of the examinations was there any evidence leading to the existence of an amorphous cement or materials in metals. With the exception of the amorphous cement, the slip-interference theory of hardness as advanced by Jeffries and Archer was entirely confirmed.

Commenting on this paper, R. S. Archer explained that the slip-interference theory does not state that there is an amorphous cement but there is a material present which similates it.

In an extremely interesting paper, F. H. Williams, Canadian National Railways, Montreal, discussed failures of locomotive parts and the examination of their structures under the microscope. The paper was profusely illustrated with photographs of failures and photomicrographs of the material. In each case, Mr. Williams gave full data, including chemical composition, heat treatment and apparent cause of failure. No specific conclusions were presented by Mr. Williams for overcoming certain defects, but he stated that pitfalls could be avoided only by eternal vigilance. Discussion of this paper was extensive, although largely of inquiry nature, but it indicated widespread interest in the subject of locomotive parts failures.

A paper by A. B. Kinzel, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y., discussing steels for case nitrification was a study of the effect of various alloying elements on the case resulting from low temperature nitrification which showed particularly the extreme hardness and general desirability of the case obtained with vanadium steels. Because of the objec-



(Left)—A 99 per cent rolled nickel sheet at 2000 diameters, showing crystals within a single grain. New method of preparation used. (Center)—The same sample as shown at the left photographed at 100 diameters. Ordinary method of preparation used. (Right)—Cast ingot iron showing a grain boundary with different orientation of crystals in adjacent grains

tions to aluminum-bearing steels for nitrification, the author started out to develop another steel.

A vanadium addition showed promise and a detailed study of the effect of vanadium was made. It was discovered that the hardness increases with increasing vanadium content, the carbon being constant. It also was apparent the hardness decreases with increasing carbon content, the vanadium content being constant. From a study of the carbon-vanadium proportions, it appeared that 0.4 per cent vanadium in solid solution is necessary to obtain a maximum hardness, provided no other ferroalloys of the nitride case hardening type are present. The effect of chromium, manganese and silicon is to increase the effectiveness of small quantities of vanadium. Thus, the heat which contained 0.3 per cent chromium, 1 per cent silicon, 1 per cent manganese, 0.30 per cent carbon and only 0.30 per cent vanadium gave maximum hardness.

Corrosion Resistant Metals Are Investigated

SOME generalities in the manufacture of chrome iron castings was discussed in a paper prepared by V. T. Malcolm, metallurgical engineer, Chapman Valve Co., Indian Orchard, Mass., and V. O. Homerberg, professor of metallurgy, Massachusetts Institute of Technology, Cambridge, Mass. The purpose of the paper was to correlate the facts pertaining to these castings, containing low carbon and 16 to 20 per cent chromium. Manufacture of chrome iron castings presents a number of difficulties not well understood for the reason that the same practice as applied to ordinary carbon or alloy steels cannot be used in the production of high-chrome irons. The product, ordinarily given the name of chrome iron, is technically a corrosion resisting mild steel which is distinguished from steel by its low carbon content.

Stainless Steels Discussed

The subject of stainless steels was introduced by E. C. Bain, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y., in a paper, "X-Rays and the Constituents of Stainless Steel." This contribution, the second recent study of this type of steels by Mr. Bain, dealt with the utilization of X-rays in the study of the fundamental nature of stainless steel. A general survey of the properties of the alloys in which chromium is utilized to develop rustlessness was offered and an attempt made to explain the properties on the basis of the changes in the constituents present. The changes in the amounts and conditions of the crystalline phases responsible for hardness and rust-resistance as developed by a variety of quenches and draws were followed by X-rays.

Mr. Bain used the information gleaned from the extensive study of one steel to illustrate the broad trends of the general class of steels. The correlation of the hardness, corrosion resistance and crystal structure of the steel in some 60 conditions of heat treatment presented enabled the author to form certain conclusions with reasonable assurance. The steel employed was of the higher carbon type capable of substantial hardening and the results were appreciable in general to all similar steels of this type. Approximate specifications of the steel were: Chromium, 17.4; carbon, 0.77; manganese, 0.43; silicon, 0.25; and nickel, 0.24 per cent. It was shown that with higher and higher quenching temperatures the corrosion resistance increased—and the hardness also, up to the point of persistent austenite.

Comparisons between the various methods for testing the hardness of metals were made in a paper prepared by H. M. German, Universal Steel Co., Bridgeville, Pa. By descriptions and test data, the author indicated the technique of each method and the results to be obtained by its use. After discussing the brinell method in considerable detail, he described and illustrated an improved hardness testing machine of his own design which he claimed possesses several advantages over the usual brinell machine, in that the rate of pressure application is fixed, the time of pressure application is fixed, the applied load is constant, the time of application of the applied load is fixed, and the rate and time for release of the applied load is fixed.

Cites Value of Tests

In concluding, Mr. German explained that all the methods of testing are valuable. Some give results that are standard and others are comparative, however, if the basic principles of the tests are understood and if the necessary operating precautions are observed, consistent results can be obtained with all the methods.

A paper, "Heat Treatment of Forgings and Castings for Selective Directional Adjustment of Residual Stresses," by W. J. Merten, Westing-

house Electric & Mfg. Co., East Pittsburgh, Pa., discussed methods of selective abstraction of heat of selective cooling, by a directed quenching, for the purpose of producing favorable directional internal or residual stresses in forged disks or cast parts of rotating bodies. Ordinary cooling from the periphery toward the center is conducive to conditions detrimental to their application and their subjection to centrifugal stresses.

Mr. Merten described the directing of the coolant upon the middle of the rotating hollow bored or forged disk by properly placed spraying nozzles or by enclosing the red hot disk in a container with ports at the middle of both sides and immersing the same into the coolant and then simultaneously opening the ports and rotating the disks. The change from the ordinary existing compressive stresses in disks cooled from the periphery to tensional stresses and at the middle to compression is thereby accomplished resulting in a favorable condition of direction of residual stresses in such disks with relation to service stresses under high speed rotation.

By way of illustration, the author showed a photograph of an assembled and machined turborator built up of numerous disks bolted together.

Jerome Strauss, United States navy yard, Washington, discussed "Medium Carbon Pearlitic Manganese Steels," in a highly technical paper at the Thursday evening session. The steels considered contained 1.0 to 2.0 per cent of the element manganese within the carbon range of 0.30 to 0.50 per cent.

Mr. Strauss found that the mechanical properties of these manganese steels on small sections place them in a class with other structural alloy steels, with which they may be compared to advantage. Corrosion resistance of the alloys is favorable as is also strength at slightly elevated temperatures.

Alloying Elements in Steels Affect Cutting

OPENING the Friday morning session was a paper by H. J. French and T. G. Digges, senior metallurgist and assistant scientist, bureau of standards, Washington, the title of which was "Effects of Antimony, Arsenic, Copper and Tin in High-Speed Tool Steel." This paper related to the effects of added antimony, arsenic, copper and tin on low-tungsten, high-vanadium, high-speed tool steel. Hot working and machining properties, hardness after different heat treatments, some metallographic features and tool performance in both rough turning and finish turning were considered. The magnitude of the effects produced by each of these four elements was dependent upon the type of service to which the tools were subjected.

According to Mr. French, copper, produced the smallest decrease on tool life when taking light cuts at fine feeds and high speeds, while tin, arsenic and antimony, in order showed increasingly deleterious effects. Relatively small changes were produced in the roughing tool performance, but each of the four elements tended to affect adversely the hot working properties when present in sufficient proportions in the high-speed steel.

Compares Welding Methods

In a brief paper on fusion welding, S. W. Miller, welding engineer, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y., made a comparison between different methods of welding, showing the need in all of them for protection of the metal from oxidation or removal of oxides formed by the heat. The author explained the action of fluxes and of the advantages of making rods for fusion welding of the proper chemical composition, so that the resultant welds will be free from oxides.

Advantages of higher strength and ductility obtained by the use of such rods were pointed out, and the necessity of scientific investigation was explained. In concluding, Mr. Miller urged that this kind of study be used in all cases, so that the inherent advantages of fusion welding can be fully realized.

Physical Properties Discussed

Discussion of this paper was limited largely to the question of physical properties and structural safety in a completed weld. In answering the questions, Mr. Miller said that weld metal can not equal forged and heat treated alloy steel in physical properties, but good weld metal, made by commercial welders, may have 65,000 pounds per square inch ultimate strengths, 48,000 pounds yield point, 25 per cent elongation in 2 inches, and 40 per cent reduction in area.

Types of failures of steel in railroad practice provided the material for a paper presented by Robert Job, vice president, Milton Hersey Co. Ltd., Montreal. Using a number of photographs of failures, the author gave examples of typical failures and reported the findings in each case. Among common causes of failures are improper fillets, rough machining scratches, improper heat treatment, and in the case of rails, nicks caused by broken wheels. Internal fissures also cause trouble in rail heads.

In concluding, Mr. Job pointed out that a careful scrutiny and investigation of failed materials should result in a saving in time, money and lives. Like the practical paper of Mr. Williams, this contribution proved of considerable interest and many speakers commented upon it or sought additional information.

In a paper, "Alloy Steel for Boiler Construction," Charles McKnight, International Nickel Co., New York, recommended the use of nickel steel for boiler use. According to the speaker, this material is between 25 and 40 per cent stronger than carbon steel with practically the same toughness and greater resistance to impact. Other advantages were listed as follows: At boiler temperatures it is much superior to carbon steel; it is immune to ageing embrittlement; it is a commercial product and unusually uniform; it can be made to develop even higher strengths than are now demanded; it is resistant to boiler corrosion; and it is suited for use as boiler tubes and staybolts.

Test results on chromium-molybdenum sheet of a composition for use in aircraft construction were summarized in a paper by F. T. Sisco and D. M. Warner, chief of metallurgical laboratory and test engineer, respectively, Air Corps, Wright field, Dayton, O.

Impact Values Cited

Concluding the session was a paper, "A Note on the Hardness and Impact Resistance of Chrome-Nickel Steel," by B. F. Shepard, Ingersoll-Rand Co., Phillipsburg, N. J. This contribution gave results of Izod impact, hardness and tensile tests of chromium-nickel steel of the S. A. E. 3250 type with varying nickel and carbon content. Higher carbon reduces resistance to impact without production of increased hardness. Tempering to 300 degrees Fahr. was found to increase impact resistance without materially affecting the hardness, but best use of this type of steel is with 550 degrees Fahr. temper.

Industrial Men in the Day's News

E. Kent Hubbard, President, Manufacturer's Association of Connecticut

FOR ten consecutive years active head of an important industrial association, he has been re-elected president for 1928.

IDENTIFIED with financial and industrial affairs of Connecticut for 35 *years, he has gained national prominence through his keen understanding of industrial problems.*

ALTHOUGH not identified directly with the metalworking industries, his position gives him an important relation to all Connecticut industrially.

ELECTION to the presidency of the Manufacturer's Association of Connecticut brings a unique honor to E. Kent Hubbard, of Hartford, Conn. For more than ten consecutive years he has held this office, bringing into the association an enthusiasm and spirit of unselfish co-operation seldom enjoyed by a state organization.

Several years ago when the New York, New Haven & Hartford railroad faced the refunding of some $25,000,000 of bonds without available cash, it was due in large measure to the foresight of the Manufacturer's Association of Connecticut that the support of New England industrialists was secured and the railroad's credit maintained. This incident marked the start of a co-operation between railroads and manufacturers in Connecticut which has contributed much to the prosperity of both.

Mr. Hubbard was born in Chicago. He prepared for college at St. Paul's school and in 1888 entered Trinity college at Hartford, from which he was graduated in 1892 with the degree of bachelor of science. Upon graduation he entered the employ of the Russell Mfg. Co., Middletown, Conn., manufacturer of cotton goods and elastic fabrics, and learned the details of the business. He held the position of treasurer when in 1916 he left to organize the Maxim Silencer Co., of which he was president for three years. At this time he also was acting vice president of the Manufacturers' association, succeeding to the presidency immediately thereafter.

Although Mr. Hubbard is the managerial head of his association, he nevertheless has many other public affiliations. His charities are many, and he is a member of the National Industrial Conference board, a trustee of Wesleyan university, and active in banking and financial circles. For 11 years he was a member of the state board of finance of Connecticut, and in fulfillment of his obligations there, at a time when Connecticut was being put upon a budget system, he spent much of his time on state financial affairs.

Much of Mr. Hubbard's ability in the industrial work which he has undertaken lies in his keen understanding of the inter-relationship between industry, the public, and the state. A strong open-shop advocate and a believer in the right of an employer to employ and a laborer to seek work regardless of affiliations, his policies have been responsible largely for present conditions in Connecticut where industrial freedom is considered to be at its best.

Mr. Hubbard has four children, the oldest son being in business in Chicago, and the second son, now at Yale, following in his father's footsteps in athletic pursuits, being a member of the Yale football squad. In 1924 the degree of master of arts was conferred upon Mr. Hubbard by Wesleyan university.

Men of Industry

Personal News of a Business Character Pertaining to the Iron and Steel and Related Fields of Enterprise

V. A. GREENE has been elected vice president and general manager of the Edgar Allen Steel Co., Inc., Chicago, succeeding George R. Bennett, resigned. Mr. Greene for the past 12 years has been eastern manager for the company with headquarters in New York. He has been with the Edgar Allen company more than 13 years. Prior to that he was with Cammell-Laird & Co. Ltd., New York, and also the Muir-Davidson Steel Co., New York.

* * *

Don S. Brisbin has been elected president and director of the Columbus-McKinnon Chain Co., Columbus, O., to be in charge of the company's sales work.

* * *

H. A. Hallead, formerly of the Boxill-Bruel Carbon Co., Columbia Park, O., has been made sales manager of the Bodine Electric Co., Chicago, manufacturer of electric motors.

* * *

M. H. Fesler, formerly sales manager of the Federal Burner Corp., Bridgeport, Conn., has resigned to become sales manager of the Automatic Machine Co. of that city.

* * *

E. S. Chamberlain, formerly with the National Tool Co. and Kearney & Trecker Co., has joined the Triplex Machine Tool Co., New York, as machine tool salesman.

* * *

Frank G. Lukey, formerly western manager for A. Milne & Co., New York, has resigned and is now associated with the Ziv Steel & Wire Co., Chicago, as district manager with headquarters in San Francisco.

* * *

Earl R. Nichols, formerly with the Service Steel Co., Detroit, has joined the Peter Smith Heater & Mfg. Co., Fordson, Detroit. Mr. Nichols will devote his efforts toward developing pressed steel stamping business for the company.

* * *

Francis O. Carfer has been made sales manager of the Republic Metalware Co., Buffalo, succeeding W. F. Hopkins, who died recently. Mr. Carfer, associated with the Republic company for the past year, has been in the sheet metal industry for more than 17 years.

* * *

Elihu Thomson, director of the Thomson research laboratory of the General Electric Co., Schenectady, N. Y., has been named a member of the American committee of the World congress of engineers to be held in Tokio, Japan, in November, 1929.

LOUIS J. TROSTEL
Newly elected president of the American Ceramic society as announced in last week's issue

* * *

Leon Brillouin, of the College de France, Paris, has been appointed acting professor of theoretical physics for the second semester at the University of Wisconsin, Madison, Wis. He is known as one of the ablest and most widely known of the younger French physicists. He was a member of the third, fourth and fifth Solvay Congresses in Physics at Brussels. He also was a delegate to the International mathematical congress at Toronto in 1924.

* * *

S. H. Widdicombe has been appointed Philadelphia sales manager of the Shoemaker Bridge Co., structural fabricators, with headquarters in the Harrison building of that city. Mr. Widdicombe had been chief engineer for this company at Pottstown. In the Philadelphia post he succeeds A. K. Hohl, who resigned recently as contracting engineer in the Philadelphia district.

* * *

R. F. McElvenny, formerly manager of the Tacoma smelter, has been made general manager of the western division of the American Smelting & Refining Co., New York, including plants in Washington, Montana, Utah, Nebraska and California. He will be succeeded at Tacoma by A. H. Richards, chief consulting metallurgist from the New York office.

* * *

Samuel Harden Church, vice president and director of the Union Steel Castings Co., Pittsburgh, has resigned as vice president and secretary of the Pennsylvania railroad, western lines, being retired from active service Feb. 1 under the pension regulations. One of the oldest officers in point of service, Mr. Church passed his seventieth birthday Jan. 24, after having spent 52 years in railroad work.

* * *

Carl S. Neumann, secretary, Union Mfg. Co., New Britain, Conn., maker of chucks, castings, etc., recently was elected vice president of the New England Foundrymen's association. Mr. Neumann was born in New Britain, Conn., and had his first mechanical and manufacturing experience with the Stanley Rule & Level Co. and the Stanley Works, both of New Britain. About 1904 he joined the Union Mfg. Co., becoming assistant secretary in 1906 and secretary in 1908. He is in charge also of the foundry department of the company.

* * *

E. C. Brandt, works manager of the Homewood plants of Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., and F. J. Shiring, superintendent of motor apparatus, have been appointed assistant works managers of the East Pittsburgh works. J. E. Webster, engineer of works, has been appointed chief plant engineer.

A. E. Kaiser, assistant manager of the East Pittsburgh works, has been made director of production for all plants. S. C. Hoey, superintendent of

the manufacturing engineering department, has been made manager of the Homewood renewal parts works.

* * *

P. C. Doyle, sales manager of American Metal Cap Co., Brooklyn, N. Y., has been elected vice president.

* * *

C. I. Auten, M. T. Clark and C. D. Loveland have been elected directors of the Truscon Steel Co., Youngstown, O.

* * *

Henry Duckworth, controller of the Norton Co., Worcester, Mass., has been elected director for a three-year term of the Equity Co-Operative bank, that city.

* * *

Joseph H. Dillon, chief engineer at Coatesville, Pa., for Bethlehem Steel Co., Bethlehem, Pa., has resigned to become connected with the International Harvester Co., Chicago.

* * *

George W. Thurston has been elected general manager of the American Screw Co., Providence, R. I., in addition to vice president. Paul C. Nicholson, a director, has been elected a vice president.

* * *

George P. Coulter, Detroit, has been appointed exclusive agent in Michigan for the Standard Sand & Machine Co., Cleveland. Mr. Coulter has been identified with the foundry equipment field in Michigan for ten years.

* * *

Warren H. Converse has been elected treasurer and general manager of the Pan-American Bridge Co., New Castle, Ind., succeeding Jesse D. Smith, whose death was announced in IRON TRADE REVIEW, issue of Jan. 12.

* * *

H. A. Sedgwick, formerly superintendent, has been made manager of operations of the Cutler-Hammer Mfg. Co., Milwaukee, manufacturer of electric controlling devices. A. E. Rauch has been made an assistant superintendent.

* * *

Charles M. Schwab, chairman of the Bethlehem Steel Corp., Bethlehem, Pa., announced in last week's issue as having been awarded the Bessemer gold medal, will be presented with it at the meeting of the Iron and Steel institute, the donor of the medal, May 3-4 in London, England.

* * *

O. D. Fries has been made salesman in charge of consumer motor business in the Detroit territory, for Lincoln Electric Co., Cleveland, maker of motors and welding equipment. Mr. Fries was educated in Glasgow, Scotland, and has had wide experience in engineering as well as selling.

* * *

E. F. W. Alexanderson, consulting engineer of the General Electric Co., Schenectady, N. Y., and the Radio Corp. of America, was presented with the John Ericsson medal at the fortieth anniversary banquet of the American Society of Swedish Engineers in New York Feb. 11. The award was made for Dr. Alexanderson's contributions to the field of radio engineering.

* * *

S. T. Johnston, vice president and general manager of the S. Obermayer Co., Chicago, has been nominated for president of the American Foundrymen's association.

Fred Erb, president, Erb-Joyce Foundry Co., Detroit, has been nominated for vice president of the association. Directors nominated include S. W. Utley, vice president, Detroit Steel Casting Co., Detroit; L. W. Olson, works manager, Ohio Brass Co., Mansfield, O.; B. H. Johnson, works manager, Cresson-Morris Co., Philadelphia; Peter J. Krentz, vice president and works manager, Buffalo Foundry & Machine Co., Buffalo, and C. E. Hoyt, executive secretary, American Foundrymen's association.

* * *

Charles E. Stone, since 1924 vice president of the Interstate Drop Forge Co., Milwaukee, manufacturer of drop forgings, has been elected president, succeeding C. R. Messinger, who is a member of the board of directors and president of the Chain Belt Co., that city. Prior to his office at the Interstate company, Mr. Stone was associated with the Chain Belt Co., first as purchasing agent and later assistant to the president. He is director also of the Nugent Steel Castings Co., Chicago. Lamar S. Peregoy has been elected vice president of the Interstate company. C. C. Bremer and J. C. Merker have been re-elected treasurer and secretary, respectively.

Obituaries

ROBERT L. IRELAND, 60, at one time a member of M. A. Hanna & Co., and vice president of the American Shipbuilding Co., both of Cleveland, died in New York, Feb. 17. Mr. Ireland was born at Stratford, Conn., and received his early education in Stamford, Conn., being graduated later from Yale university, New Haven, Conn. He went to Cleveland and in 1892 organized the Hackney Bicycle Co. Shortly thereafter Mr. Ireland became associated with the Globe Iron Works Co. as assistant secretary and was made vice president and treasurer in 1898. He was instrumental in bringing about the consolidation of the shipbuilding interests of the Great Lakes, the organization resulting being the American Shipbuilding Co. Mr. Ireland was elected vice president, holding the position until 1903. He became associated as a partner with M. A. Hanna & Co. the year following. He was connected with many companies as an executive or director, and was also a member of numerous clubs in Cleveland and New York.

* * *

Fred R. Campbell, 50, for 15 years superintendent of the Case Cutlery Co., Bradford, Pa., died in that city Feb. 15. He had been a resident of Bradford for the past 23 years, and was active in civic and fraternal life.

* * *

Thomas Henry Hopkirk, 58, eastern sales manager, American Steel Foundries, New York, died at his home in that city Feb. 14. Mr. Hopkirk was born in Toronto and was associated with the Erie railroad in various capacities for a number of years until he joined the American Steel Foundries in 1908.

* * *

Howard A. Winton, 33, general manager of branches of the Heil Co., Milwaukee, manufacturer of steel dump bodies, tanks, hydraulic hoists, etc., and president of the Milwaukee Association of Industrial Advertisers, died Feb. 7. Mr. Winton joined the Heil Co. at the close of the war, and shortly became advertising manager.

* * *

James W. Nelson, 60, formerly president of the Brooklyn Engineers club, Brooklyn, N. Y., died recently at Altadena, Calif., where he had gone several years ago for his health. Born in Cambridge, O., and educated at Lawrence, Kans., he lived for 45 years in Brooklyn. For many years he specialized in designing and developing high pressure hydrostatic machinery and was manager of Richard Dudgeon Inc., New York. He was

(*Concluded on Page* 548)

British Shipbuilding Is Active

Orders Booked for Ten Submarines and 21 Merchant Vessels—Steel Prices Raised for All Buyers Outside Rebate System—Tin Plate Tending to Advance—German Exports Increasing—Continental Markets Stronger

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, Feb. 21.—(*By Radio*)—British steelmakers have increased prices 5 shillings ($1.21) per ton to all buyers not included in the rebate system. Shipbuilding work is heavy, British yards having contracts for ten submarines and 21 merchant ships. Demand for galvanized sheets is improving, orders coming from India and South America. Overseas inquiries for tin plate are good, and prices may be advanced.

German exports are increasing. Inquiries are being received from the Far East and South America. Steel bars are quoted £5 10s ($26.73). A general lockout in the German steel industry is improbable, it is reported from Berlin, due to official intervention. Deutschewerft has taken a contract for a 7000-ton floating drydock for Jugoslavia.

French and Belgian iron and steel prices are stronger. Inquiries are being received from South America and Japan. The Roumanian government commission is reported to have decided to renew the government railroad trackage within three to four years.

British Trade Gain Is Increasing Steadily

Office of IRON TRADE REVIEW,
Prince's Chambers, Corporation St.

BIRMINGHAM, Eng., Feb. 6.—(*European Staff Service*)—Improvement in the iron and steel trades, though it appears to vary a good deal as between different districts, is making progress. An encouraging feature is that it is most manifest in pig iron, stocks in the Middlesbrough district reducing and prices maintaining firmness. There the furnaces have been increased from 39 to 40. On the west coast, where high-class pig iron is produced, it has been found necessary to damp down one furnace, stocks having lately become heavier. In the Midlands the makers of Northampton iron have agreed to maintain No. 3 at £3 ($14.61) per ton and the effort has been so far successful, fair sales having been made at this price.

Sterling $4.87

Steel mills continue to benefit from improvement in shipbuilding, Glasgow and the North East coast having booked good orders. At Barrow in Furness the mills have been busy for some months supplying material to the shipyards. In the Midlands demand is chiefly for constructional steel for which, though the tonnages are small, the orders come in with fair regularity.

Dorman Long & Co., Middlesbrough, have received a contract for 25,000 tons of steel in connection with the building of a large factory for the Imperial Chemical Industries. This makes a total of 45,000 tons booked by this firm. An order of an unusual character has been taken by William Beardmore & Co. Ltd., for 5000 tons of steel towers, in connection with the Central Scotland electricity scheme. A number of orders have been placed by railroads, including contracts for rolling stock, and the same class of business is coming from several foreign railroads.

Finished steel prices continue unchanged and the rebate scheme appears to be helpful in retaining business at home. Foreign steel has undoubtedly become less competitive lately, owing to the substantial rise in prices. Thus Belgian 2-inch billets

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, February 20	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON	£ s d		£ s d		£ s d		£ s d	
Foundry No. 3, Silicon 2.50-3.00	$15.86	3 5 0*	$16.10	3 6 0	$16.10	3 6 0	$16.10	3 6 0
Basic	.....	.....	14.64	3 0 0	14.64	3 0 0	14.64	3 0 0
Basic-bessemer	17.08	3 10 0†	14.64	3 0 0	14.64	3 0 0	14.64	3 0 0
Hematite, Phosphorus 0.02-0.05	17.08	3 10 0	21.81	555*	.....	.....	17.08	3 10 0
SEMIFINISHED STEEL								
Billets	$28.06	5 15 0	$22.45	4 12 0	$22.45	4 12 0	$21.23	4 7 0
Wire rods	47.58	9 15 0	26.84	5 10 0	26.84	5 10 0	26.84	5 10 0
FINISHED STEEL								
Standard rails	$37.82	7 15 0	$31.11	6 7 6	$31.11	6 7 6	$31.11	6 7 6
Merchant bars	1.58c	7 5 0	1.14c	5 4 0	1.14c	5 4 0	1.13c	5 3 0
Structural shapes	1.61c	7 7 6	1.03c	4 14 0	1.03c	4 14 0	1.00c	4 7 0
Plates, ship, bridge and tank	1.77c	8 2 6	1.35c	6 2 6	1.35c	6 2 6	1.38c	6 5 0
Sheets, black, 24 gage	2.40c	11 0 0	2.26c	10 5 0	2.26c	10 5 0	2.86c	13 0 0
Sheets, galvanized, 24 gage, corrugated	2.89c	13 5 0	3.30c	15 0 0	3.25c	14 15 0	3.74c	17 0 0
Bands and strips	2.83c	10 10 0	1.35c	6 3 0	1.35c	6 3 0	1.49c	6 15 0
Plain wire, base	2.12c	9 15 0	1.54c	7 0 0	1.54c	7 0 0	1.57c	7 3 0
Galvanized wire, base	2.94c	13 10 0	1.95c	8 17 6	1.95c	8 17 6	2.01c	9 3 0
Wire nails, base	2.51c	11 10 0	1.60c	7 5 0	1.60c	7 5 0	1.67c	7 12 0
Tin plate, base box 108 pounds	$ 4.39	0 18 0	.....	.....	.....	....	$ 6.83	1 8 0

*Francs

Domestic Prices at Works or Furnace—Last Reported			Francs		Francs		Marks	
Foundry No. 3 Pig Iron, Silicon 2.50—3.00	$15.86	3 5 0	$17.10	435(2)	$16.40	590	$18.62	78
Basic pig iron	.....	.....	18.47	470(1)	15.15	545	21.00	88
Furnace coke	2.93	0 12 0	5.90	150	5.14	185	5.13	21.50
Billets	28.06	5 15 0	20.73	525	22.24	800	27.45	115
Standard rails	1.74c	8 0 0	1.36c	755	1.43c	1,100	1.51c	140
Merchant bars	1.63c	7 10 0	1.13c	630	1.16c	895	1.48c	137
Shapes	1.66c	7 12 6	1.04c	575	1.15c	885	1.45c	134
Plates, ship, bridge and tank	1.82c	8 7 6‡	1.33c	740	1.46c	1,120	1.65c	153
Sheets, black, 24 gage	2.51c	11 10 0	2.47c	1,370	2.28c	1,750	2.38c	220
Sheets, galvanized 24 gage, corrugated	2.83c	13 0 0	3.36c	1,865	3.67c	2,825	3.78c	350
Plain wire	2.11c	9 15 0	1.71c	950	1.82c	1,400	2.32c	215
Bands and Strips	2.29c	10 10 0	1.35c	750	1.56c	1,200	1.71c	1

•Middlesbrough; †Scotch foundry iron; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 12s 0d ($2.93) f. o. b. Ferromanganese £20 10s 0d ($100.04) delivered Atlantic seaboard, duty paid. German ferromanganese £15 0s 0d ($73.20) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

which a month or two ago cost £5 7s 6d ($26.16) delivered have lately been increased to £5 12s 6d ($27.38) and importing merchants find that before this price is accepted it must be approved by a central selling agency on the continent. The result is that foreign steel now offers little advantage over British semifinished material especially as the latter has been considerably reduced lately. Buyers of foreign steel are not inclined to take it unless prices are much lower than British. The reduction, however, is chiefly in foreign semifinished steel, finished material not having advanced in anything like the same proportion. The change is attributed to the increased cost resulting from the claim of German workmen for reduced working hours and higher wages.

In wrought iron the northern wages board has decreed a reduction as the result of a fall in the selling prices of 5 per cent and under the Midland board wages are reduced 2½ per cent. Mills of the Black Country, especially those producing best iron, are meeting larger demand owing to the improved requirements in connection with engineering and shipbuilding.

Scrap is selling a little more freely and prices are somewhat firmer at £3 ($14.61) per ton delivered in South Wales and £2 15s ($13.40) in the Midlands.

Galvanized sheets range from £13 ($63.31) to £13 2s 6d ($63.91). Better inquiries are coming from the Far East and several colonies as well as South and Central America. India has bought lately with much more freedom. Better orders, however, will be necessary to keep mills well employed, especially the modern plant producing on the largest scale.

Luxemburg Makes Record

Brussels, Feb. 6.—(*European Staff Service*)—Production of pig iron in Luxemburg for 1927 was greater than in 1926. The highest monthly production in the history of Luxemburg was attained in August—238,238 metric tons. Luxemburg output of steel in 1927 also exceeded that of 1926. August, 1927, was also the month in which steel production reached its highest mark with 215,860 metric tons. The following table gives comparisons in metric tons:

Mon. ave.	Pig iron	Steel ingots and castings
1913	212,320	111,355
1924	179,765	157,340
1925	196,940	173,855
1926	209,295	186,980
1927:		
January	227,707	195,334
February	207,780	184,177
March	229,779	203,007
April	224,555	206,046
May	237,614	210,176
June	223,808	203,203
July	225,227	202,987
August	238,238	215,860
September	229,120	212,976
October	220,173	215,139
November	221,217	207,402
December	228,139	213,864
Total, 1927	2,713,357	2,470,171

French Production Is at Even Rate

Paris, Feb. 6.—(*European Staff Service*)—Provisional figures giving production of pig iron and steel in France for 1927 show that the output of pig iron was 9,293,000 metric tons, compared with 9,392,917 tons in 1926 and 5,207,000 tons in 1913, without Alsace-Lorraine. The 1927 output included basic bessemer phosphorus 7,162,000 tons, phosphorus foundry 1,200,000 tons, phosphorus gray forge 48,000 tons, hematite foundry 373,000 tons, hematite for refining 304,000 tons, ferroalloys 216,000 tons.

The output of steel in 1927 was 8,275,000 metric tons, as against 8,386,249 tons in 1926 and 4,687,000 tons in 1913 and the prewar boundaries. The 1927 output of steel included basic bessemer 5,858,000 tons, open-hearth 2,251,000 tons, electric 91,900 tons, acid bessemer 62,900 tons, crucible steel 11,200 tons. The following table gives comparisons in metric tons:

Mon. ave.	Act. Furn.	Pig iron	Steel ingots and castings
1913		433,900	390,580
1924		641,085	575,025
1925		707,840	620,540
1926		782,745	698,855
1927:			
Jan.	147	804,924	673,462
Feb.	146	716,315	627,973
Mar.	145	801,020	703,915
Apr.	146	773,914	680,521
May	146	794,175	711,874
June	143	746,644	671,907
July	143	769,095	676,864
Aug.	142	773,483	694,029
Sept.	141	761,389	693,276
Oct	143	795,991	722,914
Nov.	140	764,465	683,562
Dec.	142	796,000	735,000
		9,293,000	8,275,000

Belgian Exports Gain

Brussels, Feb. 6.—(*European Staff Service*)—Exports of the principal steel products from Belgium and Luxemburg in November, 1927, included 71,879 tons of billets, 49,131 tons of structural shapes, 48,407 tons of plates and sheets, 30,967 tons of wire products. The following table gives comparisons in metric tons:

Mon.	IMPORTS		EXPORTS	
ave.	Pig iron	Steel	Pig iron	Steel
1925	27,095	15,860	8,060	242,325
1926	27,505	27,265	13,105	304,075
1927				
Jan.	30,253	23,086	17,742	332,921
Feb.	21,876	20,793	8,191	367,723
Mar.	26,172	33,192	10,713	440,445
Apr.	27,351	26,579	15,363	372,296
May	27,843	24,229	10,766	371,211
June	34,966	28,961	10,474	359,563
July	35,334	22,696	13,118	373,255
Aug.	42,913	27,824	11,368	436,631
Sept.	28,388	27,726	13,665	355,720
Oct.	41,404	31,881	6,964	379,047
Nov.	30,964	33,632	9,313	395,345

French Steel Market Much Improved

Office of IRON TRADE REVIEW,
9 Rue de Londres

PARIS, Feb. 6.—(*European Staff Service*)—The French iron and steel market has substantially improved and orders have been coming in freely. Progress is mostly due to the coming operation of the semifinished steel and structural steel comptoir, and negotiations now being carried on for the formation of a plate and sheet comptoir. With regard to the latter, however, it is expected that considerable time will elapse before it is definitely organized. There are indications that as a counterpart to the organization of selling syndicates, the more important users of steel products may organize buyers' syndicates.

The expected increase in freight rates also induces consumers to place orders to obtain February delivery. It is reported that the increase in transportation rates would amount to 11 per cent of the present rate, and this is bound to have a serious influence on the market. It must be noted that it is usual to quote the French consumer a price f.o.b. mill, and the consumer stands the expense of carrying the goods of his own plant or warehouse. In certain cases compensation will be granted for transportation of certain classes of goods or for certain districts where the increase could not be economically borne. Iron and steel plants resent this move on the part of the railroad companies and the ministry of commerce, as it will also increase the price of transport of raw materials, and it is estimated this increase might reach 100,000,000 francs ($39,300,000). Consequently it is to be expected that the prices of iron and steel products in France will rise, provided the majority of producers agree to tone down competition.

Franc—3.93c

On the other hand fuel has just dropped 8 francs (31.00c) per ton for foundry coke and 5 francs (20.00c) per ton for furnace coke. Pig iron is firm, and it is rumored a further rise will be made. Semifinished steel also is firm and only a few producers are on the market. Works are not anxious to sell considerable tonnages in advance as they hope to obtain better prices when the comptoir is actually in operation. Basic bessemer billets are sold at 525 francs ($20.60) and blooms at 495 francs ($19.50), Thionville parity. There is active business in merchant bars and beams, bars being quoted at 610 to 620 francs ($24 to $24.40) and beams at 570 to 580 francs ($22.50 to $22.85). The plate and sheet market is hardening; 5-millimeter plates are sold at 720 to 760 francs ($28.25 to $29.95), medium-sized sheets at 780 to 820 francs ($30.60 to $32.25), and the finer sizes at 1000 to 1050 francs ($39.45 to $41.45), base, all per metric ton. It is announced that the Usines de Wendel have just blown in a blast furnace stack at their Hayange works with a capacity of 300 tons per day.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

SPANG, CHALFANT & CO. INC., has re-elected Henry Chalfant chairman and Gordon Fisher president, following acquisition of the Standard Seamless Tube Co., Ambridge, Pa., and purchase of a large interest in the Oil Well Supply Co., Pittsburgh. W. C. Fownes Jr., formerly treasurer of the Standard company, has been elected chairman of the executive committee. C. R. Barton has been re-elected vice president and C. F. Cruciger vice president and treasurer. Directors include these officers; J. H. Hillman Jr. and A. B. Sheets, who are directors of the Oil Well Supply Co.; W. S. Mitchell, C. F. Beachler and W. J. Hampton.

* * *

BEALL PIPE & TANK CORP., Portland, Oreg., has opened a sales office at Spokane, Wash., in charge of M. H. Bertenshaw.

* * *

KENNEDY-VAN SAUN MFG. & ENGINEERING CORP., New York, has moved to larger quarters in No. 2 Park Avenue building.

* * *

MACNAB & CO, licensees in Great Britain of the Tabor Mfg. Co., Philadelphia, have moved their offices to larger premises at 150, Holborn, London, E. C. 1.

* * *

HO. SWOBODA INC., Pittsburgh, Pa., has been retained by the school board at Altoona, Pa., to design and supervise an important increase in capacity of its central light and power plant.

* * *

METAL DOOR & TRIM CO., Laporte, Ind., has occupied its new offices in a plant addition which includes a large display room where an exhibit of its products is maintained.

* * *

KUNG CHIN IRON WORKS CO. INC., 53 Linching Road, Yangtszepoo, Shanghai, China, manufacturers of industrial machinery and wire and wire nails, is planning the construction of a rod mill, according to officials of the company.

* * *

CHATEAUGAY ORE & IRON CO. has built a small steel castings plant at Standish, N. Y., where its blast furnace is located. This foundry is equipped with two small converters and the product at present is limited to mine car wheels, mine pipe and miscellaneous requirements for related companies.

* * *

PERKINS MACHINE & GEAR CO., Springfield, Mass., has elected officers for 1928, as follows: President, Julian L. Perkins; vice presidents, James A. Perkins and John Oakley; treasurer, John J. Dugan; clerk and assistant treasurer, Frederick H. Rich; directors, E. C. Gilbert, A. W. Gilbert and Leo Lowenstein.

* * *

INDIANAPOLIS CASTINGS CO., Indianapolis, has passed from control of Frank W. Lewis, its founder, to John L. Wallace, vice president and general superintendent. Mr. Lewis is retiring from active business and has sold his entire holding of stock to Mr. Wallace, who becomes president. G. J. Walker succeeds him as general superintendent.

* * *

INTERNATIONAL ELECTROLUX INC. will establish a central sales office at Pittsburgh, to cover eastern Ohio, western Pennsylvania and West Virginia. Its present sales office at Pittsburgh is in the Professional building, in charge of Thomas Houghom, recently transferred from Cleveland. Rex Mansmann has been made assistant manager.

* * *

NORTHWEST FURNACE BUILDERS, an association of warm air furnace builders in Washington and Oregon, has elected D. S. Robinson, Tacoma, Wash., president; W. H. Carston, Majestic Furnace & Mfg. Co., Seattle, Wash., vice president; Floyd Oles, Manufacturers Association of Washington, secretary-treasurer.

* * *

DAYTON POWER & LIGHT CO., Dayton, O., has placed an order with the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., for a radial flow type surface condenser of 33,000 square feet capacity, and auxiliary equipment. It will serve a 25,000-kilowatt turbine generator unit at the Millers Ford station. The condenser is designed to condense 300,000 pounds of steam per hour and maintain a vacuum of 29 inches of mercury.

* * *

NATIONAL GRAVE VAULT CO. and Galion All Steel Body Co., both of Galion, O., have been sold to eastern capitalists. G. L. Stiefel, president and general manager, will remain with the new organization in the same offices, T. J. McNichols as sales manager, B. J. Heiser as assistant sales manager, W. C. Mason as office manager and Fred F. Bszantz as factory superintendent.

* * *

FUSION WELDING CORP., 103rd street and Torrence avenue, Chicago, manufacturer of welding and cutting equipment, has completed its engineering and research laboratories. Provision is made for classrooms for instruction of engineers seeking better knowledge of welding processes. Full working exhibits of the company's equipment will be established at this laboratory and at its offices at New York, Cleveland, Kansas City and San Francisco.

* * *

MASSEY-HARRIS CO. LTD., Toronto, Ont., has added Frank J. Jones and J. H. Gundy to its board of directors. Thomas Bradshaw, general manager, stated sales the past year were 17½ per cent higher than the previous year and 65 per cent of the trade was for export. Its French factory, completed in the summer of 1927, was given a test during late harvest time and gave satisfactory results. Manufacturing on the continent, where labor is cheap, is almost necessary, to compete with manufacturers in European countries.

* * *

NICHOLSON FILE CO., Providence, R. I., has elected officers, as follows: President and general manager, Samuel M. Nicholson; vice president and treasurer, Paul C. Nicholson; secretary and assistant general manager, Ernest S. Craig; assistant treasurer and cashier, Henry W. Harman; assistant treasurer, Albert J. Dana; assistant secretary and manager of credits, Augustus E. Saunders; domestic sales manager, Wallace L. Pond; foreign sales manager, S. Foster Hunt;

assistant to the president, Robert W. Hathaway.

* * *

AMERICAN ZINC, LEAD & SMELTING CO. is moving its operations from Hillsboro, Ill., to East St. Louis, Ill., where it will concentrate its spelter and sulphuric acid departments. The plant there will be enlarged.

* * *

EATON AXLE & SPRING CO., Cleveland, has bought the automobile heater manufacturing division of the Perfection Heater Mfg. Co., Cleveland. The latter company retains its manifold and carburetor business. Equipment for manufacturing the line of heaters will be removed to the plant of the Eaton company.

* * *

FAWELL ENGINEERING CO., First National Bank building, Pittsburgh, Joseph F. Fawell president, has been appointed representative in that district for the Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., designer and builder of rolling mill machinery, hydraulic equipment and special machinery.

* * *

STANDARD SUPPLY & EQUIPMENT CO., Pittsburgh, industrial, mine and railroad supplies, pipe, bars and similar products, has moved to its new office building and warehouse at South Second and McKean streets, south side. The building is seven stories and is equipped with complete material-handling devices.

* * *

UNITED STATES RADIATOR CO. is negotiating for the purchase of the Pacific Steel Boiler Co., with plants at Waukegan, Ill., and Philadelphia. Ratification by stockholders of the latter company was set for Feb. 20. Purchase is being made to give the radiator company a compact boiler to enable it to make complete heating installations.

* * *

MT. VERNON CAR MFG. CO., Mt. Vernon, Ill., has bought the plant and equipment of the J. P. Devine Co., Buffalo, manufacturer of chemical machinery, and will operate it under the direction of J. P. Devine. The plant will be used for car manufacturing in periods of activity in that industry, and for production of machinery when car building is slack.

* * *

AMERICAN ROLLING MILL CO., Middletown, O., has appointed six junior vice presidents, as follows: Weber Sebald, in charge of commercial development; John B. Tytus, structural engineering; J. C. Miller, representative at Ashland, Ky.; D. E. Epplesheimer, special assistant in general management; Bennett Chapple, advertising and publicity; A. K. Lewis, special representative at Butler, Pa.

* * *

JE. BURKE CO., Fond du Lac, Wis., has been formed to continue the business of J. E. Burke, manufacturer of metal weather strips, radiator shields and other metal building specialties. A plant is being established in Milwaukee.

* * *

GLOBE IRON & METAL CO. INC., has succeeded to the business of the Globe Iron & Metal Co. Officers of the company are: President, Samuel Schein; vice president, Abraham E. Schein; secretary and treasurer, Jacob Schein; assistant secretary, Arthur Schein. The officers are sons of the late Moses H. Schein, who formed the new corporation to continue the business he had founded.

* * *

JI. CASE PLOW WORKS INC., Racine, Wis., has been taken over on an option by the Massey-Harris Co., Toronto, Ont., manufacturer of agricultural implements and power farm machinery. The plant will be continued in operation and enlargements are planned. The Toronto company has been distributor in Canada for the tractor maufactured at Racine. The J. I. Case Plow Works Inc. is entirely separate from the J. I. Case Threshing Machine Co. also of Racine. In 1919 it absorbed the Wallis Tractor Co. and moved its plant from Cleveland to Racine.

Obituaries

(*Concluded from Page* 544)

a member of the American Society of Mechanical Engineers and of the American Society of Civil Engineers.

* * *

Robert J. Aspin, dock superintendent of the National Tube Co., Lorain, O., since 1899, died Feb. 14, in Sebring, Fla.

* * *

Bernhard Blitzer, president of the Lightolier Co., New York, manufacturer of lights and fixtures, died recently in that city, aged 62.

* * *

Charles F. Kinsman, chairman of the Sterling Bronze Co., New York, died at Sarasota, Fla. Mr. Kinsman was born in San Francisco in 1867.

* * *

Thomas E. Gilbane, associated with William Gilbane & Bro., contractor and builder, died at Providence, R. I., recently. The Gilbane company built some of the largest buildings in Providence and Rhode Island. Mr. Gilbane was an ex-president of the Builders' and Traders' Exchange, Providence.

* * *

Ernest Boley, 66, assistant to the vice president in charge of operations of the American Steel & Wire Co., Cleveland, died at his home in that city Feb. 20. Mr. Boley became associated with the Steel & Wire company in 1884 following an apprenticeship of several years in the various mills.

* * *

Sturgis H. Thorndike, well-known consulting engineer and president of the New England section of the American Society of Civil Engineers, died recently in Boston, aged 59.

* * *

Charles W. Hessler, formerly manager of the Austin street Arcola plant of the American Radiator Co., Buffalo, died at Gloucester, N. J., recently. He became connected with the Austin street plant in 1920, and was made works manager in 1924.

* * *

Joseph Farris, 64, furnace manufacturer of Springfield, Ill., died at his home in that city, Feb. 7, following an illness of several weeks. Mr. Farris was born in Logansport, Ind., and went to Springfield in early youth where he was employed by Joseph C. Lamb, foundryman, proprietor of the Aetna foundry. Mr. Farris entered the foundry field himself later, and in 1915 added the Farris Furnace Co. to the Capitol Foundry & Machine Works.

* * *

Michael C. Armour, 77, formerly a partner in Rogers, Brown & Co., and former president of the Iroquois Iron Co., died Feb. 15 at his home in Pasadena, Calif. Retiring from active business in 1917, Mr. Armour lived in Evanston, Ill., for some time, removing to California recently. He became connected with Rogers, Brown & Co. in Cincinnati, and in 1895, went to Chicago, taking charge of the office in that city. Mr. Armour was president of the Iroquois Iron Co. from 1900 to 1916.

* * *

Albert C. Ludlum, 61, engineer, inventor and president of the New York Engineering Co., New York, died in that city Feb. 15. Mr. Ludlum joined the Kennedy & Pierce Co., Denver, builder of mining machinery, in 1889. In 1895 he returned to New York, organized the New York Engineering Co. in 1906 and established a plant at Yonkers, N. Y. He was a member of the American Society of Mining and Metallurgical Engineers, the Academy of Political Science, the American Society of Naval Architects and various other engineering, business and social organizations.

Machinery

February Sales Probably Will Not Equal Orders Placed in January—Current Inquiries Not Heavy—Many Sales of Spot Nature

GENERALLY speaking, the machine tool and shop equipment business is fair; some markets are witnessing good activity, while others are writing orders slowly. February started off with indications that the record for January would be surpassed, but certainly now it is doubtful if the February totals will even equal January. The General Electric Co. is placing orders in the East and has just issued additional inquiries for ten machines. In the Pittsburgh area, dealers are interested in the requirements of the Carnegie Steel Co. and Koppers Co., both of which have just issued lists. Westinghouse Electric & Mfg. Co. is expected to make known its second-quarter needs shortly. Automotive buying is small and industrial buying is for small lots.

New York, Feb. 21.—Sellers describe machine tool demand as fair, with the great run of inquiries and orders confined to single machines. Outstanding is continued good inquiry from the General Electric Co., Schenectady, N. Y. This concern has come into the market for fully 10 miscellaneous machines within the past few days. New York Central railroad has added four grinders to its now rather substantial pending list. Nine 5-inch reduction hand millers have been awarded by a motor company in Detroit to the Pratt & Whitney Co. Crane buying is light, but inquiry is increasing sharply for both locomotive and overhead cranes.

Worcester, Mass., Feb. 21.—Machine tool builders report an increase in inquiry and a larger volume of business placed this week. Makers of machinery appear to be doing much better than dealers. Most machinery makers are ahead of last year. While group units are not being taken in volume individual machines are being bought fairly liberally. The automobile industry is inquiring for more tools. Machine shops are steady buyers and small tools are also selling better. Machine builders are buying steel close to requirements. Competition continues keen in this market.

Pittsburgh, Feb. 21.—Lists from Edgar Thompson works of the Carnegie Steel Co. and from Koppers Co. are features of the machine tool market. The former involves mostly woodworking equipment although several metalworking tools likewise will be bought. The latter list covers two each grinders, pipe machines, drill presses, lathes, etc. for three destinations, namely New Haven, Conn., Philadelphia and a New Jersey seaport. Westinghouse Electric & Mfg. Co., has not yet issued its second quarter list, but this is expected within the next few weeks. No inquiries have been received as yet from the Baltimore & Ohio railroad for Connellsville, Pa., and it is understood that decision has not been reached as to whether it will rebuild there or build new shops elsewhere. Sales still are piecemeal, involving such single items as a slotter, open-side planer, turret lathe, thread miller, and similar machines, going to individual scattered buyers.

Chicago, Feb. 21.—Sales of machine tools in this district have slowed down to some extent from the January volume, although inquiry continues good and buying is active in used tools. Santa Fe has come out for two or three additional items on the list it issued two weeks ago. None of the other western roads have made known their 1928 needs as yet. The Burlington has purchased a large blacksmith hammer and a few other items for current needs have been brought by other carriers. An automobile bumper manufacturer in the Chicago district purchased three milling machines and several lathes. H. D. Conkey & Co., Mendota, Ill., has asked quotations on a 42-inch vertical boring mill and a 1¼-inch keyseater. Prices show little change.

Cleveland, Feb. 21.—Activity in this territory continues to hold a fairly uniform pace and it appears that February business will compare favorably with January sales. Dealers report inquiries to be scarce but spot business remains steady. Manufacturers, however, are finding their orders for this month sufficiently below the January level, that only a miracle could pull sales up to that point in the next week. Automotive buying is negligible with a tool ordered now and then, thus practically of the going business is of an industrial nature.

CRANE ORDERS PLACED

Six steam shovels for the Amtorg Trading Corp., New York; to Marion Steam Shovel Co.

Six cranes, including two 200-ton wrecking cranes, three ballast spreaders and one pile driver, for Canadian Pacific railway; to unnamed builders.

Six cranes, including 6, 5 and 2-ton electric cranes and two 25-ton and one 3-ton electric hoists, for Gartshore-Thompson Pipe Foundry Co., Hamilton, Ont.; to Herbert-Morris Crane & Hoist Co.

Four hand-power traveling cranes, including one 10-ton and three 15-ton, for new factory of Firestone Tire & Rubber Co., Los Angeles; to Cyclops Iron Works.

Three used electric overhead cranes, including one 10-ton and two 5-ton, for Fagan Iron Works, Jersey City, N. J.; to McCabe Machinery Co.

Three electric overhead cranes, including one 65-ton and two 120-ton, for Public Service Corp., Newark, N. J.; previously reported placed— went to Cleveland Crane & Engineering Co.

Two 4-ton electric hoists for United Electric Railway Co., Providence, R. I., to Shepard Electric Crane & Hoist Co.

Two 1½-ton electric hoists for United Electric Railway Co., Providence, R. I., to Chisholm-Moore Mfg. Co.

Among single orders were: 5-ton electric crane for Wallingford Steel Co., Wallingford, Conn., to Niles Crane Corp.; 10-ton crawler crane for Certain-Teed Products Corp., New York, to unnamed builder; 25-ton locomotive crane for Union Bag & Paper Corp., New York, for shipment to Tacoma, Wash., to Industrial-Brownhoist Corp.; 1-ton hand-power crane for Tidewater Structural Co., New York, to Reading Chain & Block Corp.; 150-ton overhead crane for Phoenix Utility Co., New York, reliably reported placed; 25-ton trolley skull cracker crane with 10-ton auxiliary for Carnegie Steel Co., Duquesne, Pa., to Alliance Machine Co.; 7½-ton electric boom crane for St. Paul & Tacoma Lumber Co., Tacoma, Wash., to Colby Steel & Engineering Co.

CRANE ORDERS PENDING

Several locomotive cranes, understood to include five of the crawler type for the Amtorg Trading Corp., New York, for shipment to Russia; bids asked.

Two 200-ton stripper cranes for Wheeling Steel Corp., Steubenville, O., in addition to several smaller cranes for another destination; bids being taken.

5-ton electric crane for Westinghouse Electric & Mfg. Co., Pittsburgh, for installation in a New York state plant; pending.

15-ton traveling crane for Koestlin Tool & Die Co., Detroit; bids asked.

January Crane Business Registers Slump

New York, Feb. 21.—Both new orders and shipments of electric overhead cranes declined in January, according to figures just announced by the Electric Overhead Crane institute. Shipments involve 75 cranes, with a total of capacity of 754¼ tons and a total valuation of $431,563.67. This compares with 117 cranes in December, with a total capacity of 1309¼ tons and a total valuation of $762,486.50.

New orders fell behind shipments by one crane, amounting to 74. These cranes have a total capacity of 764¾ tons and a total valuation of $375,671.18. In December, new orders involved 93 cranes, with a total capacity of 1033½ tons and a valuation of $585,701.28.

A slight decline was also noted in unfilled orders, 195 being involved, with a total capacity of 3638 and a total valuation of $1,735,398.95. In the preceding month, unfilled orders involved 198 cranes, with a total capacity of 3594½ tons and a total value of $1,792,225.44.

Interstate commerce commission has found reasonable the freight rates on bars from Knoxville, Tenn., to main line stations of Nashville, Chattanooga & St. Louis railroad between Bridgeport, Ala., and Nashville, Tenn.

Power Conference Told of Strides in Steam Generating Practice

TREND toward greater simplification and systematizing of combustion control equipment, was emphasized by speakers at the third Midwest Power conference, at the Stevens hotel, Chicago, Feb. 14-17. Doubt was expressed whether radical changes will be accomplished in the future. Further development of high pressure generating equipment was foreseen.

The seven sponsor associations of the conference are the American Institute of Electrical Engineers, American Institute of Mining Engineers, National Electric Light association, Western Society of Engineers, American Society of Civil Engineers, American Society of Refrigerating Engineers, and American Society of Heating and Ventilating Engineers. The Midwest Engineering and Power exposition was held in the Coliseum, with 275 manufacturers of power and electrical machinery making exhibits.

Marked Progress Made

Greater progress has been made in production of steam generating equipment in industrial plants and central stations in the past ten to 15 years than even in the engineering fields of the automobile industry, declared T. A. Peebles, of the Hagan Corp., Pittsburgh, in discussing combustion control in industrial plants. He pointed out that the iron and steel industry has made important progress in combustion control in steam generating systems. He estimated that two-thirds of the loss of the past ten years has been eliminated. Development of automatic control equipment, however, has less chance in the future than in the preceding periods as this equipment has come close to the limit, he said, in pointing out that it is probable no radical improvements will be made. The problem now, he said, is to consolidate, systematize and simplify the large new units so that better results than had been anticipated can be obtained.

"It is not wise to make an installation so elaborate that additions to the operating force are required to keep it in continuous service," Mr. Peebles said. "Even if it were possible to increase the saving per unit of time by adding refinements, care should be taken to make sure that the additional refinements will not result in the equipment being out of service a sufficient length of time to more than offset the increased unit saving."

Maj. Rufus W. Putnam, chairman, declared that population is a substantial basis on which to estimate the consumption of power and that provided other factors are not unfavorable, the growth of population must mean a growth in industry.

Cited Favorable Future

"Natural facilities favor the development of the Chicago metropolitan area," he declared. "There are extensive supplies of good fuel at hand, making power and heating costs reasonable. The district is the focus of low cost production of steel.

"An excellent facility thus is in existance for cheap and efficient assembly of raw materials and distribution of manufactured products, while the concentration of railroad lines constitutes an attractive and barely touched market for the sale of electricity, which will add materially to demand for power, once electrification of terminals becomes the rule and not the exception."

Dr. Glenn Frank, president of the University of Wisconsin, spoke on "Power, the Backbone of Today's Civilization." W. S. Hovey, president of Fairbanks, Morse & Co., addressed the luncheon of the Chicago chapter of the A. S. M. E., on "The Engineer in Business."

One of the sessions was on the accomplishments of power in factory and home. The relation of power development to flood control and other river problems was the subject of several addresses. Maj. Gen. Edgar Jadwin, chief of army engineers, discussed flood control problems of the Mississippi, and D. W. Mead of Madison, Wis., spoke on problems of storage for flood control and power development. The status of hydroelectric development was outlined by Maj. G. E. Edgerton, chief engineer of the federal power commission, Washington.

Satisfactory steel castings for high pressure steam generation work should be submitted to X-ray study, said Thomas E. Murray, president of T. E. Murray Inc., New York, in a paper on "Trend and Development in Steam Generation." Few leaks in castings occur when that inspection is satisfactorily passed, he said. Forged fittings are competing strongly with castings for high pressure work, he pointed out in predicting that in the future all high pressure fittings and parts may be of forged steel entirely. He said quantity output of castings does not contribute to the best results for high pressure work.

Discussing the "Embrittlement of Boiler Plate," Dr. S. W. Parr and F. C. Straub, of the University of Illinois, outlined results of a number of tests at the university under their direction. Ten new instances of embrittled boilers, involving some 25 boilers, were the subjects of investigation. It was found that the cracks were confined to riveted areas, but occurred in practically any seam below the water line. Samples of steel from many of the cracked boilers were analyzed and tested and no marked deviation from the original mill reports were evident. This confirmed the finding previously made that embrittlement is not confined to poor steel. In all instances the boiler feed water did not meet the A. S. M. E. recommendation as to sodium carbonate-sodium sulphate ratio. The sulphates were low in all cases. "It should be noted," said the paper, "that while the phenomenon of embrittlement is not new there has been without question an increase in the number of cases where this distress has appeared."

Material Is Satisfactory

Conclusions by the investigators were that material has not been found at fault, design or workmanship of the boiler is not a primary cause, nor is the operation of the boiler to blame; common to all embrittled boilers is the alkaline condition in the boiler with a low sulphate content, and sodium hydroxide is the only material encountered in the boiler which embrittles stressed steel. It was pointed out that new inhibiting agents have been developed in the laboratory, which are being tried out.

A party of engineers associated with the conference will go abroad on an international power tour, leaving New York Aug. 18.

CONSTRUCTION and ENTERPRISE

Concise Timely Business Building Opportunities from Field of Industry

North Atlantic

BRISTOL, CONN.—E. Ingraham Co., maker of clocks and their mechanisms, plans to build a 1-story plant addition, 25 x 161 feet, to be used as a press department.

WASHINGTON—Potomac Electric Power Co. has awarded structural steel for an addition to the Bennings power plant. Stone & Webster Inc., Boston, is engineer.

BALTIMORE—Meadows Mfg. Co. has been incorporated to manufacture machinery by R. Dorsey Watkins, Calvert building.

BALTIMORE—Holland Mfg. Co., Franklin Holland, president, Central avenue and Bank street, maker of tacks, nails, etc. will build a 2-story addition.

BOSTON—American Steel Boat Corp. has been incorporated with $100,000 capital to manufacture vessels and boats of all kinds, by George E. Gilbert, 60 Fenway, Boston.

BOSTON—Mercury Motor Co. has been incorporated with $100,000 capital to manufacture motor generators, machinery, etc., by Ubaldo Silli, 63 Fulton street, Boston.

BOSTON—Burbrook Co. has been incorporated with 200 shares no par value stock to lease and operate mills, mines, machinery, etc., by Herbert W. Earley, 14 Walnut road, Somerville, Mass.

BOSTON—Automobile Coal Burner Corp. has been incorporated with $25,000 capital to manufacture and deal in burners, furnaces, etc., by Francis N. Layton, 131 Milk street, Boston.

BOSTON—Herbert N. Ridgway Inc. has been incorporated with $50,000 capital to manufacture mechanical devices by Herbert N. Ridgway, 760 Shirley street, Winthrop, Mass.

BOSTON—Viking Automatic Sprinkler Co. has been incorporated with $10,000 capital to manufacture sprinkler equipment, machinery, etc., by Joseph M. Cashman, 140 Castle street, Boston.

BOSTON—Kiley-Adams Inc. has been incorporated with 900 shares no par value stock to manufacture machinery and materials for the production of automobile accessories, by John J. Kiley, 71 Cleveland street, Arlington, Mass.

HAVERHILL, MASS.—Merrill O. Luce Inc. has been incorporated with $5000 capital to engage in the sheet metal business by Mary E. Luce, 101 Concord street, Haverhill.

MALDEN, MASS.—Saugus Plumbing & Heating Co. has been incorporated with 500 shares no par value stocks to manufacture and deal in plumbing, gas and steam pipes, fittings, etc., by Nathan Gross, 635 Eastern avenue, Malden.

PITTSFIELD, MASS.—General Electric Co., Schenectady, N. Y., will build a 2-story addition of brick and steel, 40x280 feet, to be used for the manufacture of compounds.

SPRINGFIELD, MASS.—Auto Smock & Clamp Co. has been incorporated with $25,000 in preferred shares and 1000 shares no par value stock to manufacture automobile accessories and equipment by Ernest W. White, 44 Sylvan street, Springfield.

SPRINGFIELD, MASS.—Charles Rice Inc. has been incorporated with $50,000 capital to manufacture oil burners and kindred products, by Charles A. Rice, 42 Monmouth street, Springfield.

WORCESTER, MASS.—Stearns Pressed Metal Co. has been incorporated with 300 shares no par value stock to manufacture pressed metal parts and metal products, by Eleanor L. Stearns, 192 Stafford street.

WORCESTER, MASS.—Union Heating Co. Inc. has been incorporated with $10,000 capital to manufacture and install heating and sprinkler systems and appliances, by Martin A. Ryan, Stafford street, Rockdale, Mass.

WORCESTER, MASS.—Modern Heat Treating Corp. has been incorporated with 500 shares no par value stock to carry on the business of steel treating, case hardening, etc., by Samuel Stall, 1 Purchase street.

WORCESTER, MASS.—Hunt Hydro Burner Co. has been incorporated with 100 shares no par value stock to manufacture hydrocarbon burners, heaters, etc., by Frank C. Bellis, 18 Vassar street.

NEWARK, N. J.—Ronald & Co. has been incorporated with 1000 shares no par value stock to manufacture cutlery, by Stein, McGlynn & Hannoch, Newark, attorneys.

NEWARK, N. J.—Property has been purchased at Central avenue and First street by the Services Investment Co., which will commence work shortly on a 3-story brick factory building. The New York & Brooklyn Casket Co. will occupy the building as a branch, having obtained a long term lease.

BROOKLYN, N. Y.—American Name Plate Mfg. Co., 117 Imlay street, was damaged by a recent fire.

BROOKLYN, N. Y.—I. & L. Cutler has been incorporated with $10,000 capital to manufacture and deal in metals by S. J. Cutler, 50 Court street, attorney.

BUFFALO—Metal Alloy Boat Co. has been formed by Ewart C. Hugh, head of Hugh Co., 190 Elk street, to manufacture metal alloy boats with an aluminum base. A plant will be built on the site adjoining the Hugh Co.

NEW YORK—Automatic Gear Shift Corp. has been incorporated with $250,000 capital by J. Parker, 150 Broadway, attorney.

NEW YORK—Auto Roller Bearing Corp. has been incorporated with $200,000 capital to manufacture and deal in auto accessories by United States Corporation Co., 150 Broadway.

McKEESPORT, PA.—Palmgreen Mfg. Co. has been incorporated with $5000 capital to manufacture and deal in tools, machinery, etc., by Philip Palmgreen, McKeesport.

MOUNT JOY, PA.—Grey Iron Castings Co. is building a second addition, 35 x 70 feet to its plant, to be used for offices and storage purposes. The first addition, 35 x 100 feet has been completed and is to be used for manufacturing.

PHILADELPHIA—Olney Foundry Co. has awarded structural steel for a foundry building.

PHILADELPHIA—Quaker City Iron Works, Ontario street and Aramingo boulevard, will start work at once on the erection of a plant.

PHILADELPHIA—Bids were closed Feb. 21 by the Ballinger Co., architect, on a factory building for the Brown Instrument Co., Roberts and Wayne streets.

PHILADEDPHIA—Bridesburg Foundry Co. has been incorporated with $30,000 capital to manufacture castings, patterns, dies, etc., by Harry Burgin, 4608 Salmon street, Philadelphia.

Sales Calendar

Feb. 25—Bids received on assets of Peerless Light Co., Chicago, manufacturer of lighting equipment.

April 3—Plant and equipment of Bilton Machine & Tool Co., Bridgeport, Conn., to be sold at public auction by the receiver.

Western States

LOS ANGELES—Several factory sites now are under consideration by the Club Aluminum Co. Inc., 1123 South Hill street. This company operates factories at Baltimore and Chicago and has plans for the first unit of the Pacific coast group.

OAKLAND, CALIF.—Superior Culvert & Flume Co. has been organized by J. A. Lambie who for some years has been connected with the West Coast Pipe & Steel Co. of Los Angeles. Property has been purchased on Union street and plans are being completed for a factory.

PORTLAND, OREG.—Pure Iron Culvert &

Mfg. Co. has been incorporated with $20,000 capital to manufacture iron and steel products, by David L. Davies, Philip Chipman and Ivan F. Phipps. Carey & Kerr, 1410 Yeon building, Portland, are attorneys.

SEATTLE—Manganese Products Corp. has been incorporated with $499,000 capital by W. E. Parker, Waldorf hotel.

SEATTLE—Montgomery Mfg. Co. is building a new plant on West Spokane street, for the manufacture of disk wheels for automobiles.

SEATTLE—Kennan Machinery Co. has awarded the contract for a machine shop building, 60 x 74 feet, to be built at 2925 First avenue south.

East Central

CHICAGO—Al Strutz & Co., 29 East Madison street, has been incorporated with $25,000 capital to manufacture and deal in watches, watch cases, tools, etc., with Goldman, Allhouse & Healy, 5 South Wabash avenue, correspondent.

CHICAGO—Ultra-Violet Generator Corp., 340 West Huron street has been incorporated with 100 shares no par value stock to manufacture and deal in light equipment with H. E. Kelly, 111 West Monroe street, correspondent.

CHICAGO—Armstrong, Bray & Co., 2923 Frontier avenue, has been incorporated with $20,000 capital to manufacture and deal in steel belt lacing and other stamped metal goods, with Armstrong, Bray & Co., correspondent.

CHICAGO—General Transformer Corp., 910 West Jackson boulevard, has been incorporated with $100,000 capital to manufacture and deal in electrical transformers, parts, etc., with Samuels, Lawton & Wittelle, 7 South Dearborn street, correspondents.

CHICAGO—Rauen Hartnett Foundry Co., 308 West Ontario street, has been incorporated with 150 shares no par value stock to manufacture and deal in raw and finished steel and iron products, with Ross C. Hall, 307 North Michigan avenue, correspondent.

CHICAGO—King Metallurgical Engineers Inc., 2717 North Ashland avenue, has been incorporated with $10,000 capital to manufacture and deal in all kinds of metals with Harry A. Fleck, 527 Reaper block, correspondent.

CHICAGO—National Diffused Light Corp. has been incorporated with $200,000 in common shares and 20,000 shares no par value stock to manufacture and deal in lighting and other equipment, with Leonard L. Cowan, 11 South LaSalle street, correspondent.

MENDATA, ILL.—H. D. Conkey & Co. are asking bids on a 42-inch vertical boring mill and a keyseater with capacity for keys up to 1¼-inch automatic feed.

PINCKNEYVILLE, ILL.—Pinckneyville Plow Co., West Water street, has been incorporated with $10,000 capital to manufacture and deal in implements, tools, vehicles, etc., with Charles N. Guy, Pinckneyville, correspondent.

SOUTH BEND, IND.—Bantam Ball Bearing Co. has been incorporated with $150,000 capital to manufacture and deal in machinery and ball and roller bearings by George Firmin, Vitus G. Jones and Roland Obenchain.

DETROIT—Packard Motor Car Co., East Grand boulevard, has awarded the contract for a 1-story stamping plant, 144 x 420 feet.

DETROIT—Jeschke Tool Co., 14220 Mack avenue, is inquiring for lathes and equipment for machine and blacksmith shop.

DETROIT—Superior Seal & Stamp Co., 151 East Jefferson avenue, is inquiring for machinery and equipment for the manufacture of steel seals and stamps for its proposed 1 and 2-story stamp plant on Porter street.

DETROIT—Koestlin Tool & Die Co., 3601 Humboldt avenue, H. J. Koestlin, purchasing agent, is inquiring for a 15-ton traveling crane, and equipment for an addition to its tool and die shop.

GRAND RAPIDS, MICH.—Hayes-Ionia Co., Seventh and Muskegon streets, H. J. Hayes, president, is inquiring for miscellaneous tools and equipment for its proposed metal shop addition.

FREMONT, O.—National Carbon Co., 30 East Forty-second street, New York, plans to expand its plant here and to have facilities for producing 120,000 dry cell batteries a day.

JACKSON, O.—Crown Pipe & Foundry Co. is building an addition to its pipe foundry.

WELLSTON, O.—Wellston Mfg. Co., H. D. Wendell, president, is inquiring for machinery and equipment for pattern plant, recently damaged by fire.

MANITOWOC, WIS.—Aluminum Goods Mfg. Co., Manitowoc, has postponed for six months its proposed addition to the branch factories in Two Rivers, Wis. Plans by Lockwood, Greene & Co., engineers, Chicago, are being held in abeyance.

MARION, WIS.—The village board has engaged the McMahon Engineering Co., Menasha, Wis., to prepare plans for a complete water

Where Machinery Exports Went in December

	Lathes			Drills									
	Engine	Turret	Other	Vertical	Radial	Sensitive	Other	Gear cutters	Planers	Shapers and slotters	Metal sawing cutting	Milling knee column	Machines other	Pneumatic portable tools
Russia	4	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	8	.....
France	1	7	1	.....	.....	.....	.....	8	.....	.....	.....	.....	7	179
Germany	9	12	1	.....	2	1	3	6	.....	1	1	1	2	9
Italy	.....	.....	.....	.....	.....	.....	.....	8	.....	.....	1	.....	16	40
Netherlands	.....	.....	.....	5	.....	4	.....	.....	.....	.....	.....	.....	.....	3
Spain	1	.....	.....	.....	3	.....	2	.....	.....	.....	.....	7	.....	57
Sweden	.....	.....	.....	1	.....	.....	.....	.....	.....	1	.....	5	.....	13
United Kingdom	35	3	12	2	.....	3	1	1	.....	5	1	7	20	627
Canada	5	.....	15	3	.....	5	20	5	.....	2	8	3	9	236
Mexico	.....	.....	2	19	.....	3	.....	.....	.....	.....	.....	.....	1	5
Cuba	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	5
Argentina	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	.....	26
Colombia	2	.....	.....	.....	.....	9	1	6	.....	.....	3	.....	.....	5
Chile	1	.....	.....	.....	.....	12	.....	.....	.....	.....	.....	.....	.....	12
Brazil	7	1	2	.....	.....	1	5	.....	.....	1	.....	.....	3	76
Japan and Chosen	5	.....	.....	2	.....	.....	.....	1	.....	2	.....	.....	4	338
Philippine Islands	.....	.....	1	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....
Australia	3	.....	.....	.....	.....	6	.....	.....	.....	.....	11	2	.....	172
British South Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	.....	.....	60
Venezuela	1	1	1	.....	.....	3	.....	.....	1	.....	.....	.....	.....	3
Other countries	5	6	4	1	5	10	4	3	1	26	.....	3	5	237
Total, Jan., 1927	36	8	21	23	7	31	25	21	3	38	31	56	28	1,335
February	53	21	56	35	3	40	49	7	7	10	12	30	21	1,362
March	44	15	35	56	18	58	266	62	2	49	60	11	27	1,498
April	61	15	27	20	8	61	54	29	3	40	20	22	46	.....
May	52	20	35	16	4	90	106	1	4	22	8	12	33	1,458
June	48	16	39	17	9	15	71	34	4	28	10	9	38	2,081
July	60	69	32	20	8	20	47	62	6	18	19	27	44	2,198
August	32	19	49	28	7	32	79	29	2	40	33	9	23	1,927
September	38	15	25	15	8	75	27	29	6	23	17	5	37	1,227
October	77	12	28	33	17	28	55	31	2	26	20	35	45	1,954
November	136	39	58	79	6	26	47	36	.....	28	24	22	74	1,817
December	79	31	39	34	10	57	36	38	3	41	27	32	75	2,103

works system. J. A. Arndt is village clerk.

MILWAUKEE—A 1-story brick and steel plant addition, 64 x 100 feet, will be erected for the Combination Door Mfg. Co., Fifty-seventh avenue and Mitchell street, in West Allis, a suburb of Milwaukee.

MILWAUKEE—Capital stock of the Standard Sheet Metal Works has been increased from $30,000 to $50,000 in preparation for the enlargement of plant and production.

West Central

ANAMOSA, IOWA—Multi Mfg. Co. has been incorporated to manufacture adhesive tape dispensing machines, by Frank Hahn and Ed Smith.

BURLINGTON, IOWA—Struchen & Romer Co., contractor, 655 Shubert building, St. Paul, has been awarded the general contract on the municipal dock, 100 x 170 feet. The Link-Belt Co. has been awarded the contract for furnishing escalator truck hauls and hoisting machinery. St. Louis Structural Steel Co., St. Louis, has been awarded the contract for a 50 x 215-foot steel wharf barge. W. F. Schultz, Shrine building, Memphis, Tenn., is the consulting engineer.

CEDAR RAPIDS, IOWA—Atomized Coal Corp., 106 First avenue, will build a plant for the manufacture of atomized coal and furnace feeders.

CEDAR RAPIDS, IOWA—Cooper Mfg. Co., Marshalltown, manufacturer of motor testing valves, flash controls, automobile heaters and other automobile accessories, will build a factory 80 x 200 feet.

CHARITON, IOWA—Peoples Gas & Power Co. will begin work soon on an addition to its gas plant, on Sixth street north, and will install complete equipment including an 80-horsepower steam boiler, steam driven gas compression pump, gas tower scrubbers, purifiers, and new gas making machines.

GRISWOLD, IOWA—Laco Oil Gas Burner Co., L. A. Cocklin, president, will build a new plant, consisting of two buildings, 72 x 150 feet.

NEVADA, IOWA—Iowa Railway & Light Co. has awarded contract to the Zitterell-Mills Co., Webster City, for addition to power plant.

SHAKOPEE, MINN.—American Range Corp. contemplates installing a sprinkler system at its plant here and is inquiring for information regarding systems.

KANSAS CITY, MO.—Sheffield Steel Corp., W. L. Allen, president, will enlarge its facilities to include woven wire, barbed wire and nail plant, and also a bar and rod mill.

KANSAS CITY, MO.—American Eagle Aircraft Corp., Thirteenth and Chestnut streets, is inquiring for machinery and equipment for the manufacture of airplanes.

ST. LOUIS—Union Cooperage Co. is constructing a new building containing about 21,000 square feet of floor space.

ST. LOUIS—Utility Tool & Mfg. Co., 620 Tower Grove avenue, is inquiring for a No. 4 milling machine with vertical head.

ST. LOUIS—Contract for structural steel for the plant of the Alois Aufrichtag Copper & Sheet Iron Mfg. Co., 900 South Third street, has been awarded Atlas Structural Steel Works, St. Louis.

McCOOK, NEBR.—Budig Machine Co. plans to build a 1-story machine shop addition, 40 x 100 feet.

OMAHA, NEBR.—Paxton-Mitchell Co., 2614 Martha street, will build a foundry 100 x 414 feet. The company now operates a gray iron, brass and aluminum foundry. Austin Co., Cleveland, is engineer.

Southern States

BIRMINGHAM, ALA.—Simple Piston Ring Co. has been incorporated by W. H. Hudson and T. A. Seals, 3622 Norwood boulevard.

TAMPA, FLA.—Tampa Armature Works Inc. has been incorporated to manufacture electrical machinery by C. H. Mein, 214 Haya street.

LEXINGTON, KY.—American Metal Awning Co. has been incorporated with $30,000 capital by W. M. Ingram, Hanover court.

LOUISVILLE, KY.—Stimpson Computing Scale Co., manufacturer of scales, meat choppers, etc., will build a new manufacturing plant, 96 x 200 feet, 2 stories, and has awarded the general contract to the J. F. Russell Co., Louisville. No new equipment is needed. (Noted Feb. 9.)

SHREVEPORT, LA.—Chamber of commerce is asking bids on construction of airplane hangar and machine shop, 40 x 100 feet.

LAUREL, MISS.—Rice Mfg. & Distributing Co. Inc., R. L. Rice Sr., president, has leased a building on Windham avenue to manufacture a safety automatic automobile light control.

GASTONIA, N. C.—Mill Devices Co., Linwood street, A. B. Carter, president, will build a plant for the manufacture of nuts, bolts, commercial gears, etc., for the textile trade.

OKLAHOMA CITY, OKLA.—West Steel Erection Co., has been incorporated with $10,000 capital by E. Lee Faulkner, 16 West Sixteenth street, L. H. Ramsey and C. J. Thieband, to design and erect steel buildings.

TULSA, OKLA.—Singer Steel & Metal Corp., 406 North Elwood, Morris Singer, manager, has increased capital from $15,000 to $50,000 for probable expansion.

TAYLOR, S. C.—Southern Engineering Co. has booked structural steel for a foundry building here.

Iron and Manganese Ores and Minerals

LAKE SUPERIOR ORES

Iron Ore

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½ per cent iron	$4.55
Mesabi bessemer, 51½ per cent iron	4.40
Old range nonbessemer, 51½ per cent iron	4.40
Mesabi nonbessemer, 51½ per cent iron	4.25

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic 58 to 63 per cent	8.00 to 8.50
Copper free low phosphorus 58 to 65 per cent	nominal

FOREIGN IRON ORE

Cents per unit, alongside docks, Atlantic ports

Foreign manganiferous ore, 45 to 55 per cent iron and 6 to 8 per cent manganese	10.00 to 10.50
North African low phosphorus	nominal
Swedish foundry or basic, 65 per cent	9.00 to 9.50
Spanish and North African basic, 50 to 60 per cent	8.50 to 9.00
Newfoundland foundry, 55 per cent	9.00 to 9.50

Manganese Ore

Prices do not include duty at rate of 1 cent per pound of metallic manganese contained.

Brazilian	36 to 38 cents
Indian	36 to 38 cents
Caucasian, 53 to 55 per cent washed	38 to 40 cents

Fluorspar

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$14.50 to 14.75
Washed gravel, imported duty paid eastern tidewater, per net ton	15.50 to 16.00

NASHVILLE, TENN.—Nashville Iron & Metal Co. does not plan to rebuild on the same property where its plant recently was damaged by fire, but is looking for another location with larger quarters. (Noted Feb. 9.)

AUSTIN, TEX.—Houston Lighting & Power Co. has increased its capital stock from $7,000,000 to $9,000,000 and will enlarge the power plant at Deepwater.

DALLAS, TEX.—Churchill-Humphrey Co. has been awarded contract for construction of new plant of Southern Ornamental Iron Works at Arlington, Tex. (Noted Dec. 29).

BOWMANVILLE ONT.—Alan Campbell & Associates have purchased the plant, building, machinery, etc., of the Canadian Radiant Electric Co., Grimsby, Ont. and intend to remove the machinery to Bowmanville, where it will be installed in the plant of the Bowmanville Foundry Co. Ltd. In future the company will be known as the Canadian Radiant Co., with offices and factory here. Officers of the company include, Alan Campbell, president; C. E. Rehder, vice president; directors, Peter Campbell, P. A. Thompson of Montreal, and Arthur Campbell of Montreal.

ESSEX, ONT.—Modern Tool & Die Works is making arrangements for addition and extension to plant here.

HAMILTON, ONT.—Gartshore Thomson Pipe & Foundry Co., Ltd. is completing the erection of a new plant for the manufacture of cast iron pipe by the centrifugal process. The Herbert-Morris Crane & Hoist Co., Niagara Falls, Ont., is installing the material handling equipment which will consist of a 6, 5, 2-ton electric crane and two 25-ton and one 3-ton electric hoists. The company has also awarded to W. H. Cooper, 6 Hughson street north, the contract for the construction of concrete foundations for crane footings and machine beds.

LONDON, ONT.—London Airports Ltd., will call for bids about March 1, for the construction of two steel hangars, 40 x 40 feet, at the aviation landing. The company proposes to build machine shops at a later date.

NIAGARA FALLS, ONT.—Good Specialties Ltd. has been incorporated to manufacture and deal in plumbers supplies, furnaces, stoves, ranges, etc. with $30,000 capital and 10,000 shares no par stock value by George T. Farrell, Park Whistler and Hugh Murphy.

TORONTO, ONT.—Canadian General Electric Co. has been awarded the contract for the electric equipment, generators, etc., required for the development of the Back River Power Co., near Montreal.

TORONTO, ONT.—A syndicate proposes to take over the old plant of the Baldwin Canadian Steel Corp., on Ashbridges Bay, Toronto. It is understood that only a portion of the plant will be used, and that the products to be turned out will include wrought iron pipe, steel pipe and kindred products.

Refractories

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00 to 46.00
Ohio	43.00 to 46.00
Illinois	43.00 to 46.00
Kentucky	43.00 to 46.00
Missouri	43.00 to 46.00
Maryland	43.00 to 46.00
Georgia and Alabama	40.00 to 45.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., and East Chicago, Ind.	52.00
Birmingham	51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Per Net Ton Chester, Pa. and Baltimore base

Dead-burned grain magnesite	40.00

CHROME BRICK

Per Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	45.00

New Trade Publications

STEEL PIPE JOINTS—A bulletin by the Semet-Solvay Engineering Corp., New York, features a type of joint for steel pipe to prevent leaks.

FREQUENCY RECORDER—A recording frequency indicator for power plants is illustrated and described in a bulletin by the Esterline-Angus Co., Indianapolis. The complete recorder and its details are illustrated.

SAND PREPARATION AND HANDLING—National Engineering Co., Chicago, has in preparation for early issue a catalog containing interesting data on sand preparation, reclamation, handling and various equipment for these purposes.

VALVES—Wellman-Seaver-Morgan Co. of Cleveland, has issued a bulletin on its gate and globe valves. It is illustrated and contains full specifications for various types of valves.

TUBE STRAIGHTENERS—Torrington Mfg. Co., Torrington, Conn., has issued a bulletin containing halftones of its tube and rod straighteners and complete specifications.

SHEET DIFFERENTIALS—Continental Steel Corp., Kokomo, Ind., has compiled a booklet of tables of sheet steel standard differentials, extras and bundling tables for all users of steel sheets.

MILLING MACHINES—Kearney & Trecker Corp., Milwaukee, has a catalog on two series of new milling machines recently introduced. The types are illustrated and details of construction and equipment are described.

FUEL VALUATION—Arthur T. Ward Coal Specialties Co., Pittsburgh, describes in a current bulletin its circular slide rule for computing the value of coal for steam generation. By its use, starting from a few known factors, the value of any given coal is determined by placing parts of the circular slide in proper position.

SPECIAL REFRACTORY SHAPES—Laclede-Christy Clay Products Co., St. Louis, in the current issue of its bulletin, describes its facilities for special refractory shapes. These are made of the same clays as various regular refractory brick supplied by this company.

WELDING BLOWPIPE—An oxy-acetylene blowpipe producing a flame temperature of over 6300 degrees Fahr., made by the Linde Air Products Co., New York, is featured in a leaflet isused by that company. It was used by an expert welder to repair a broken link in his watch chain, indicating the skill and dexterity attained by an experienced workman.

CRANES—Operation and maintenance of electric cranes is explained and illustrated in a booklet by the Whiting Corp., Harvey, Ill. It includes graphic illustration of a signal code for directing cranemen and instructions for erection and repair of cranes.

CATERPILLAR TRACTORS — Caterpillar Tractor Co., San Leandro, Calif., fills the current issue of its regular publication with pictures and descriptions of the heavy tasks set and performed by its product. Snow removal from highways is a timely topic.

NICKEL—A bulletin by the International Nickel Co., New York, presents the practical and economic value of nickel and chromium in gray cast iron. It is illustrated by photomicrographs of various castings with and without mixture of these elements.

COLD-MOLDED INSULATION—A booklet by the Cutler-Hammer Mfg. Co., Milwaukee, under the title "Come Adventuring," describes a material it has developed for intricate parts. It is designed to replace other materials subject to breakage and having other faults. One important use is for electrical devices where insulation, strength and low cost are important. Much in the way of useful suggestion is included.

SCREW CONVEYORS—Link-Belt Co., Chicago, through its subsidiary, H. W. Caldwell & Son Co., has issued a booklet devoted to screw conveyors. It supersedes all previous catalogs and bulletins on this subject. Both helicoid and sectional flight types are covered. Complete data, arranged for convenient reference, are included. It is illustrated to explain the appearance and use of various types. Accessories are shown.

ELECTRICAL SUPPLIES — Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has issued a new catalog of electrical supplies, presenting all electrical and mechanical features and applications of all supply equipment and appliances manufactured by this company, and a representative line of large motor and generating equipment. New developments include network protectors, transformers, regulators and relays designed especially for low voltage alternating current distribution networks.

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